

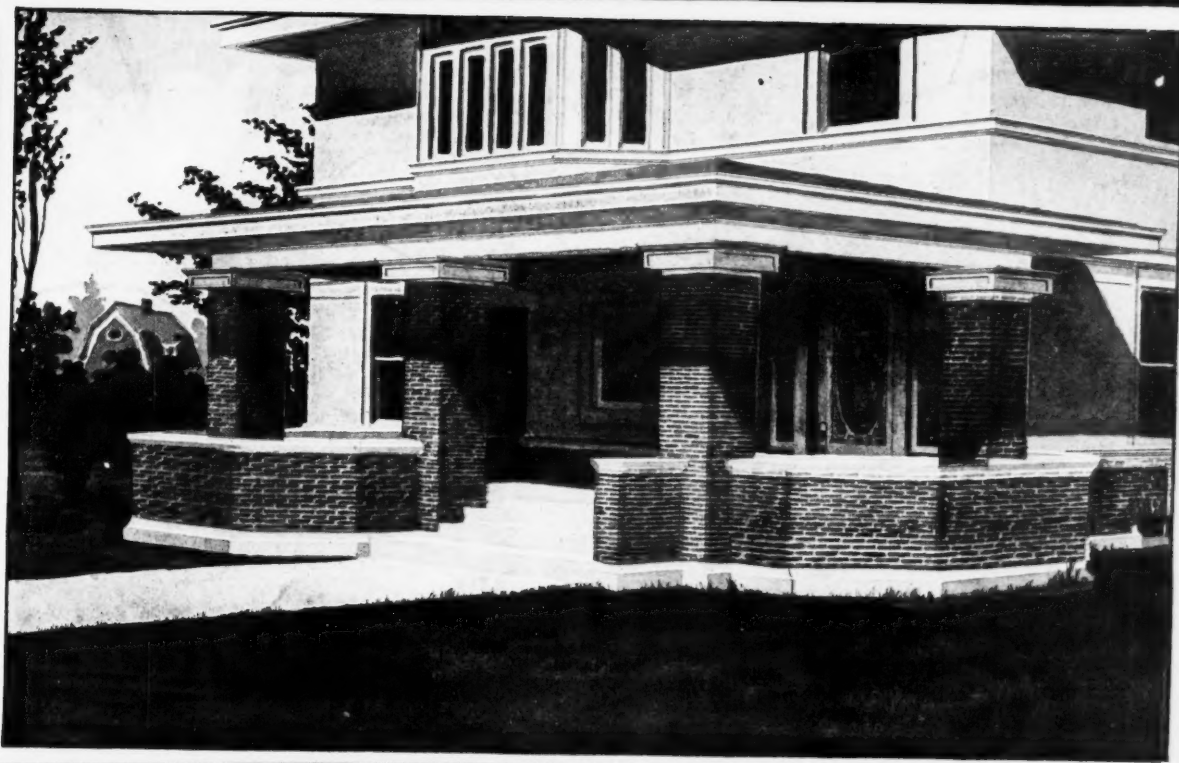
Price 25 Cents

JULY, 1911

AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER



Two Famous Silver Steel Saws

We want to call particular attention to the two Saws shown in the pictures below. Both blades are of SILVER STEEL—both are Taper Ground—both are genuine ATKINS SILVER STEEL SAWS—BUT the handles are constructed on entirely different principles.



No. 53—Genuine Perfection Handle.



No. 51—Old Style Handle.

"Pay Your Money and Take Your Choice"

ATKINS NO. 53.

The picture to the left shows ATKINS NO. 53 SILVER STEEL SAW equipped with ATKINS Genuine Perfection Handle and illustrates plainly why this type of handle is easiest on the saw arm. While it may feel strange to the beginner—a few days use will demonstrate that the Perfection Handle is the most scientifically constructed and much easier on the saw arm than any other style.

Note the line running through the saw arm straight through the blade to the cutting edge. See how every ounce of power is directed to the point of contact. Observe the wrist and saw arm, how easy and natural the blade drops into its work without pressure.

If you do not wish to try the Perfection Handle, then try the No. 51. Either of these saws or any of our other popular numbers may be purchased through your regular dealer, who should order for you from his wholesale house in case he does not carry them in stock. If he will not order for you, let us know and we will see that you are taken care of. Be sure to see that our name, E. C. ATKINS & COMPANY, and the words "SILVER STEEL" are on the blade. None other are genuine.

ATKINS NO. 51.

If you are under the impression that all ATKINS SAWS are made with the Perfection Handle, we wish to particularly call your attention to the saw shown to the right. This handle is similar to the old straight-across handle that you may have been using heretofore. Note the saw arm in this case and see that the pressure back of the saw arm is not directed on the cutting teeth, but rather to the back of the saw. Notice this wrist and see how it is necessary to push downward in order to secure proper contact. But even with this old style handle, the No. 51 is superior to any other, because the blade is made of genuine SILVER STEEL (our own exclusive formula) and is Taper Ground, which enables it to run free and easy, even in wet lumber with but little set.

OUR FREE OFFER

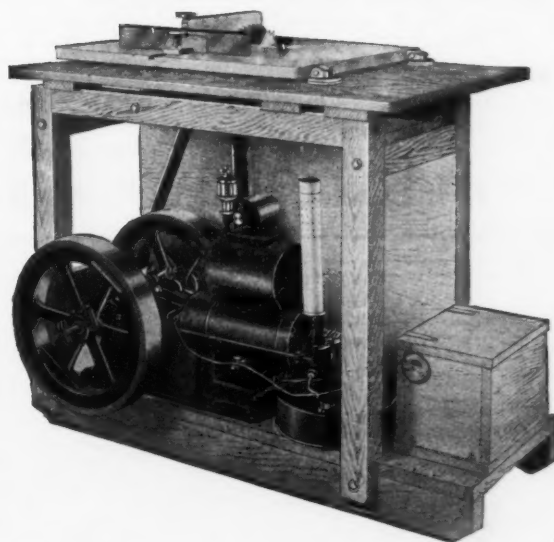
We are securing the names of high class mechanics who appreciate fine tools and if you will send us ten cents in stamps to pay postage, we will mail you one of our fine carpenter's nail aprons, Saw Sense Book, Time Book, and a great deal of useful information on the purchase and care of saws. Write to-day and learn "Who's Who" in the saw world.

E. C. ATKINS & CO., Inc.
INDIANAPOLIS, IND.

SAW RIG

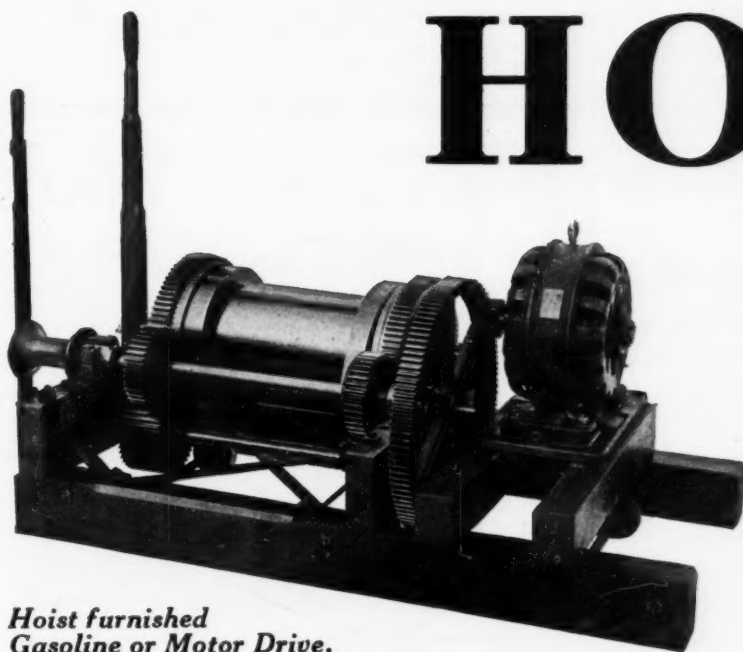
Put this portable saw rig on your job or in your shop. A complete and economical operating mill which requires no line shafts or large amount of floor space.

Will rip 2 inch lumber and cross cut 3 inch lumber.



GUARANTEED FOR LIFE

HOIST



*Hoist furnished
Gasoline or Motor Drive.*

This Builders' Hoist is the cheapest and best hoist on the market today. All gears are machine cut, which makes it a simple, noiseless and reliable outfit that can be depended upon and pay for itself on one good sized job.

WRITE FOR OUR ATTRACTIVE FOLDERS

Portable Saws and Builders Hoists

GEORGE D. SMITH

814 FISHER BLDG.,

CHICAGO, ILL.

The American Floor Surfacing Machine

IS NO EXPERIMENT. Its work since 1903 has established a standard for finely surfaced and polished floors. It is the only machine whose work is specified by leading architects and used in the best government buildings and will surface and polish any kind of a floor from common pine to the finest parquet. **IT IS THE ORIGINAL** and only two-roll, self propelled, dust collecting machine, that surfaces close to the wall and can be used in small rooms. Anyone can operate it. **ITS WORK IS RAPID, regular smooth and even** because the power that drives the rolls, also propels the machine at the same ratio of speed. It has surfaced and polished millions of square feet of the finest floors in America and Europe.

GET A MACHINE that does first class work and in paying quantities, that is fully guaranteed and sold on its merits.

Write for Our Free Book, "Surfacing Floors as a Business."

Manufactured
By

The American Floor Surfacing Machine Co., TOLEDO, O.



We Make Panels of any Thickness and Any Kind of Wood — Curved or Flat.

FOR
Wainscoting
Ceiling
Mantels
Doors
Counter Tops
Partitions
Cabinets
Shelving
Drawer Bottoms

Our products excel in Quality and Durability, because we concentrate our best efforts in their manufacture.

We specialize in Panels and have the facilities for producing best results.

Try us with your next order. Send us your specifications and ask for our prices.

AMERICAN VENEER CO.

Specialists and Manufacturers of Built-up Veneer Panels

We appreciate small orders, as well as large ones

12 Market St., - - - KENILWORTH, N. J.

Miller's Hand Mortiser

I WILL SEND ON APPROVAL

Its Work is to Make Openings in Doors for Mortise Locks.

The time is Three Minutes. The Material is Hard, Soft, Gross Grained and End Wood.



The job is clean, true and parallel with sides of door. The labor is performed with slight exertion. The care is practically none, as the tool does not get out of order. The adjustment is done in a moment's time for the different sizes. The cutters are five in number and cover locks from 1/2 inch to 1 1/2 inches thick. Thin doors are handled as easily as thick doors.

Riverside, Cal. A. W. MILLER MFG. CO. Cincinnati, O.

Do Your Next Job of Floor Scraping at Our Expense with a

Little Giant Floor Scraper

Sold only on its merits. A request brings it to your door, freight prepaid. Try it out, if you are convinced it is the best floor scraper on the market, pay for it. If not, return it at our expense.

The **Little Giant** has scraped millions of square feet of floors. Cuts right up to the baseboard and into every corner. Easy to operate. Will scrape floors quicker, cleaner, and cheaper than any other machine on the market.

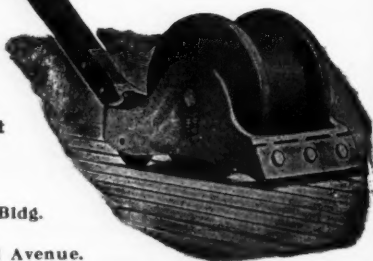
Ask us for our special price on this machine.

**Hurley
Machine
Company**

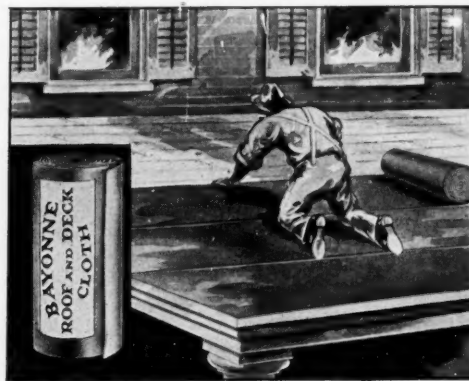
31 S. Clinton St
CHICAGO

NEW YORK:
1011 Flatiron Bldg.

DETROIT:
246 Woodward Avenue.



FOR CANVAS ROOFS



Order the Scientifically Prepared—

**BAYONNE
ROOF AND DECK
CLOTH**

Easiest to lay—
Lasts longest.
Requires but
ONE COAT OF
PAINT. The
treatment per-
meates the
fabric and pre-
serves the fibre.

BEST FOR PIAZZA ROOFS AND PORCH FLOORS

Ask for Sample Book A 6 and Prices

JOHN BOYLE & CO., 112-114 Duane Street New York
202 and 204 Market Street, ST. LOUIS

The Standard Brand of White Canvas
All Widths—All Weights—Any Quality

Our co-operative department gives complete
instruction for laying

BAYONNE or GULF STREAM

John Boyle & Co.'s Awning Stripes have
been the Standard for fifty years

**GULF STREAM
ROOFING
CANVAS**

The WEBER DOUBLE ACTING Floor Scraper

Try It Five Days FREE

Send for this scraper. Take it right out onto the job. Put it up against any other scraper made—on any kind of flooring. If its work isn't better in every way, return it.

Write Me Now

I also sell Wax Polishers, Saw Filing Vises, Cabinet Scrapers, Double-Folding Scaffold Brackets, etc.

The



knives adjust to any desired slant for perfect work on all conditions of flooring. The



The



The



is guaranteed not to chatter nor leave waves. The knife is held to its work—not by a dead weight—but by a flexible joint—similarly to action of human hand.

scrapes forward and backward. It has two knives, either of which can be brought into instant action. This rests you—saves your time—and enables you to scrape the centers of very small rooms. I guarantee perfect work in either direction. The saving in time and money in a year is a big item.

scrapes right up to the wall. By adjusting the handle to the right or left (see dotted lines), the extreme edge of the knife comes into direct draft with it. You can scrape right into the very angle of the floor without side draft, or marring the baseboard.

WEBER MFG. CO.

JOHN F. WEBER, Pres.

670 71st Ave.

::

WEST ALLIS, WIS.

A Trial Costs You Nothing

By that I Mean

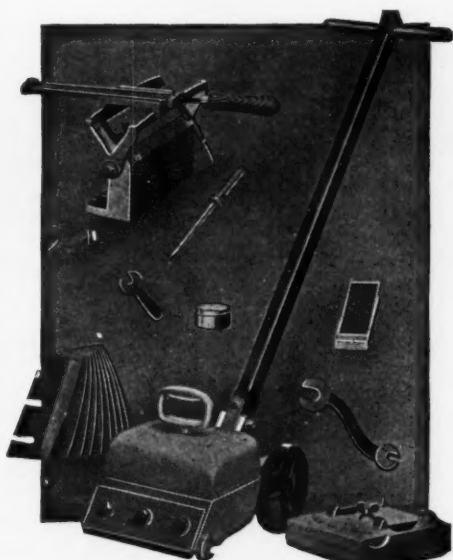
Absolutely Nothing

Sounds Strange—But It's a Fact

For many years I have been shipping the Acme Floor Scraping Outfit to interested parties on one week's free trial and if you have never taken advantage of this offer, you have been passing up a big money and labor saving proposition.

You don't have to take my word as to the "goodness" of my outfit. I give you the opportunity to prove it to yourself—more I cannot do. If you do floor scraping by hand you are wasting your money. I guarantee that the Acme Floor Scraping Outfit will do your floor scraping perfectly and to your entire satisfaction. Thousands of daily users are ready to testify as to its value to them.

Do you want full particulars of my absolutely free trial offer? Drop me a line and I will send them, as well as descriptive booklet by return mail.

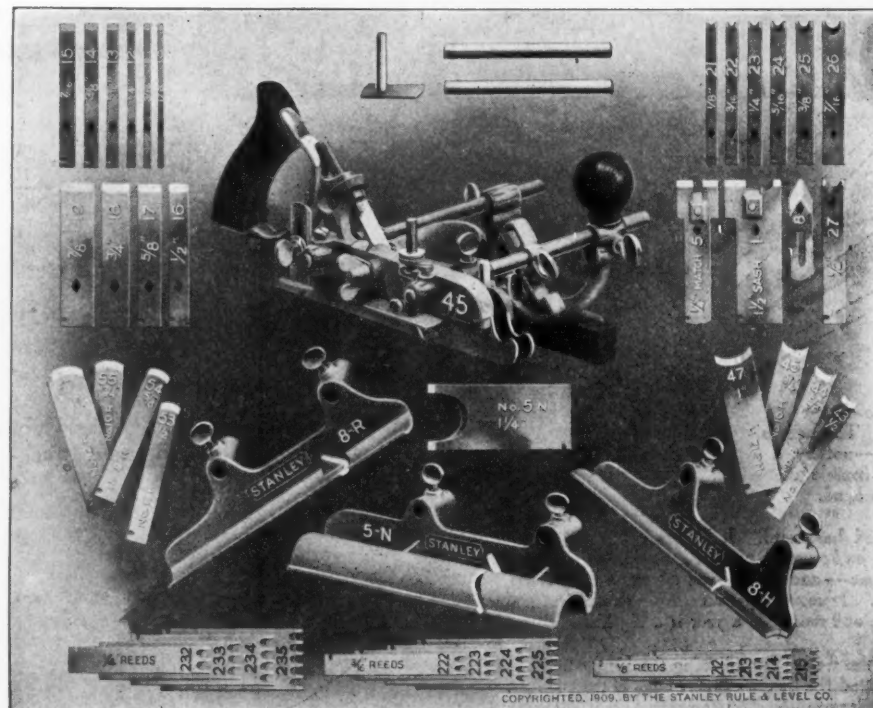


The Acme Floor Scraping Outfit.

JOSEPH MIOTKE

247 Lake Street

MILWAUKEE, WIS.



Stanley Tools

"45" Seven Tools in One

- 1.—Beading and center-beading Plane.
- 2.—Rabbet and Filletster Plane.
- 3.—Dado Plane.
- 4.—Plow Plane.
- 5.—Matching Plane.
- 6.—Sash Plane.
- 7.—Superior Slitting Plane.

Extra cutters may be used to advantage by substituting specially formed detachable bottoms.

Send for catalog giving complete description.



Stanley Rule & Level Co.
NEW BRITAIN, CONN. U.S.A.



The Bessler Movable Stairway!



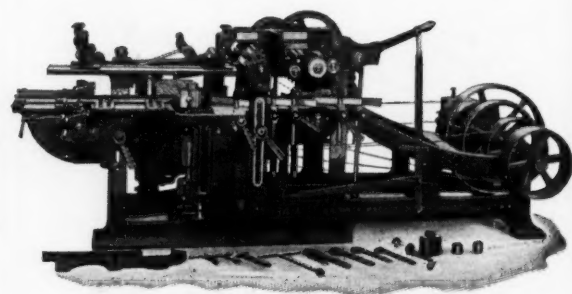
THE
BESSLER
STAIRWAY
IN
POSITION

A device combining usefulness, strength and convenience.

**Saves Space!
Low Cost!
Strong and Durable!
Easy to Operate!
Operates Automatically!
Adds Value to House!
Reduces Fire Risks!
Secures Good Ventilation!**

Write for descriptive circular and price list to

THE
Bessler Movable Stairway Co.
RAVENNA, OHIO



MOLDING MACHINES

"BETTER work at 60 feet a minute on a Smith Molder, than at 40 feet a minute on any other we have used and on kiln dried hard maple," is what one user says of the Smith Molder.

The Smith Molder is more durably constructed and perfectly finished and will produce better results than ordinary machinery of this type.

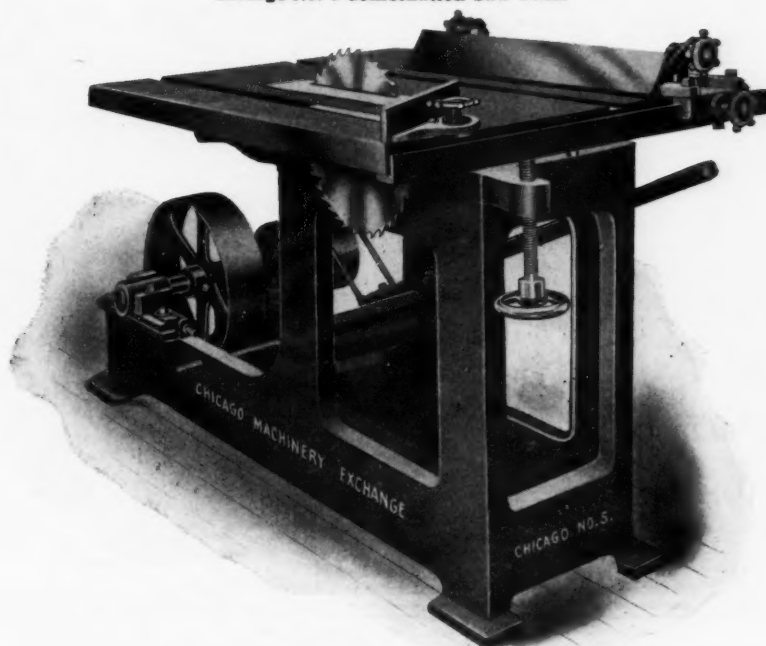
Sixty years' manufacturing experience is embodied in Smith Wood-working Machinery.

Correspondence invited.

79-2054

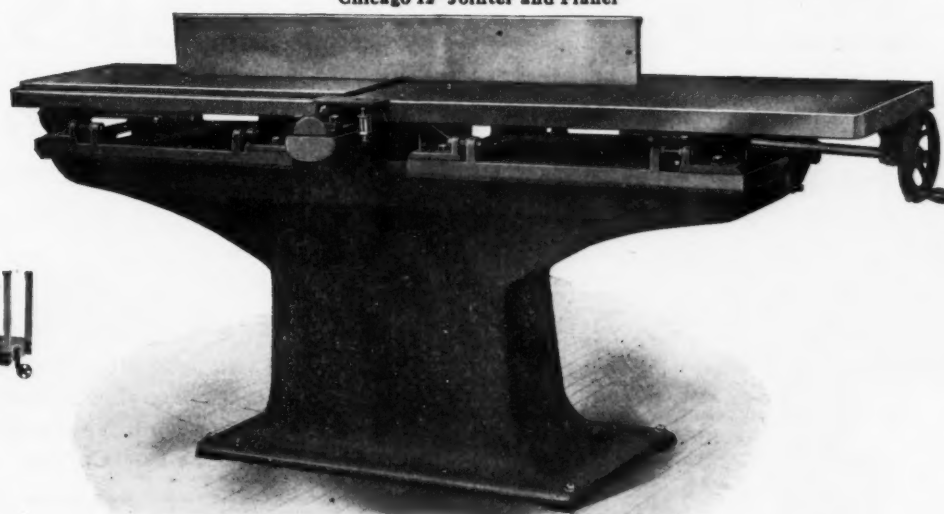
168 Sets of Machines Sold to Contractors Since Jan. 1, 1911

MACHINE No. 1
Chicago No. 5 Combination Saw Table



Used for Cutting Off, Ripping, Mitering, Grooving, Boring, Tenoning, Etc.

MACHINE No. 2
Chicago 12" Jointer and Planer



Buy Your
Trucks
Of Us

Used for Planing, Jointing, Shaping, Matching, Rabbeting, Grooving, Chamfering, Beading and Making Mouldings.

These Two Machines for \$170.00, including belt for saw arbor, countershafts, 1 14" rip saw, 1 14" cut off saw, 5 boring bits— $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ " and 1 pair of jointer knives. Ask for price on one if you cannot use both.

Send for our Special Catalogue today. We issue a catalog of machines especially adapted to Contractor's and Builder's use.

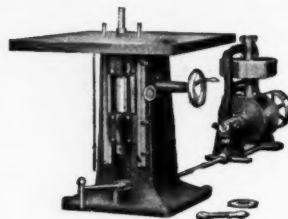
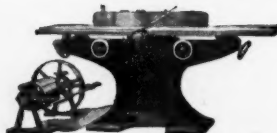
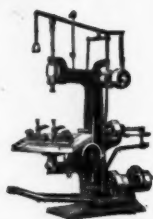
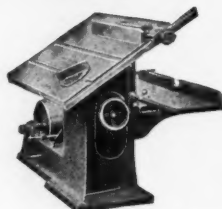
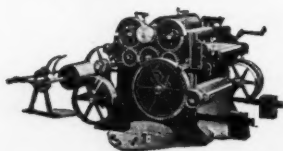
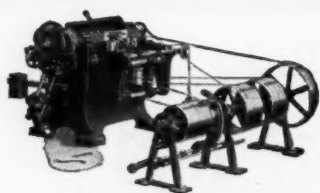
Chicago Machinery Exchange 1219-1227 Washington Bowl.
CHICAGO, ILL.

The information about Horse-power required for driving the different machines should be especially valuable to you. It tells all about our line of Band Saws, Saw Tables, Shapers, Jointers, Variety Wood Workers, Planers, Swing Saws, Disk Grinders, and Bores. We have a copy all ready to be sent to you and it will go forward on receipt of your name and address.

The Crescent Machine Company

224 Main Street

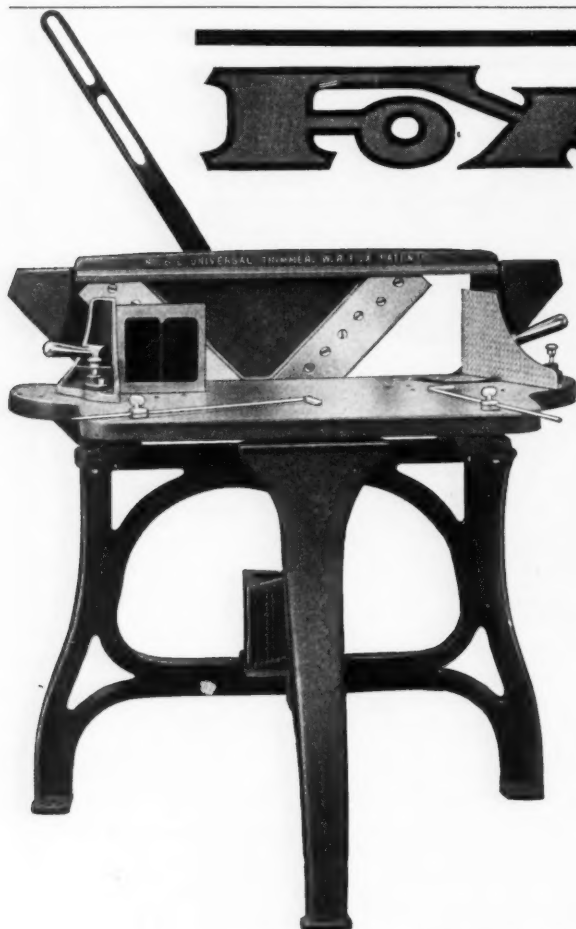
LEETONIA :: OHIO



Get a Copy
of the

1912 Crescent Catalogue

before you buy wood working machinery. The book contains 112 pages of information of interest to every user of wood working machinery.



FOX UNIVERSAL Wood Trimmers

Pattern making demands tools of the greatest accuracy. Our Wood Trimmers are built upon correct mechanical principles, hence all work produced on machines is perfect, and tools which have been in use 20 years are as accurate as machines built today.

We build Trimmers in various sizes to meet all requirements. The machine shown is our 6-E size which has a 12½ inch length of cut and 6 inch height of cut.

SEND FOR OUR COMPLETE CATALOG
OF THESE MACHINES

FOX Machine Co.

22 N. Front St., Grand Rapids, Mich.

NEW YORK OFFICE

30 Church Street

Telephone 6115 Cortlandt



A New Corbin Night Latch

Is unexcelled for ease of application, security, convenience and appearance. It has the Corbin burglar-proof cylinder, long latch bolt, and heavy strike; can be locked or unlocked from the outside, by the key at all times, and the latch bolt can be fastened whether in or out by the thumb-piece on the inside. *Send for circular BK 32, describing it.*

P & F. CORBIN
New Britain, Conn.

P. & F. CORBIN
of Chicago

P. & F. CORBIN
of New York

P. & F. CORBIN
Philadelphia

Compo-Board

THE MODERN WALL LINING
Better than Lath and Plaster in every way.

Compo-Board will outlast lath and plaster several times over—in fact it will outlast the building itself.
Makes absolutely dry, warm, moist proof walls and ceiling. Cannot crack, crumble or chip off like plaster. Keeps the rooms warm in winter and cool in summer.
Compo-Board can be used in any climate. It is quickly and cheaply put on in any kind of weather—no muss or dirt or waste of time waiting for plaster to dry.
Not only is Compo-Board a superior wall lining, but it has a multitude of uses in the home, around the yard, and in the office and factory.
Made of thoroughly seasoned kiln dried strips of lumber covered with a thick coat of cement and heavy durable paper put on under intense heat and pressure.
You can buy it in strips four feet wide and one to 18 feet long, any length you want in even feet.

Send for Booklet and Sample
And you can see just what Compo-Board is, and read all about its many advantages and numerous uses.

NORTHWESTERN COMPO-BOARD CO.
5777 Lyndale Ave. No. Minneapolis, Minn.
The border of this advertisement is a cross section view of Compo-Board.

INVERTED SWING SAW

No. 223

☐ A handy tool for any woodshop. Simple in construction—runs easily—uses little power—takes up small space, and cannot be equalled for rapid cut-off work of all kinds.

Write for description and prices of this machine, or for our special catalog of small shop tools.

J. A. FAY & EGAN CO.
545-565 W. Front Street -:- Cincinnati, Ohio

NOVO HOISTING OUTFITS

For Constructing and Mining Contractors Use

Here's a compact self-contained outfit (*you see it all in the picture*)—large and strong gears—liberal bearings—two clutches with single lever—reliable foot control brakes



No Tank
No Fan
No Freezing

These outfits are built for the unusual hard work of contractors and with such simplicity that inexperienced help can easily manage them. Equipped with the **NOVO** engine, they are very light in weight, considering the power delivered—an advantage for construction and mining work. Are absolutely self-contained with a water-cooled jacket, have all the advantages of both air and water-cooled engines, and with the disadvantages of neither.

No. 1 Hoist with 5-6 H. P. Novo Engine

No. 2 Hoist with 2 1-2 H. P. Engine

No. 3 Hoist with 3 1-2 H. P. Engine

NOVO BILGE PUMPING OUTFITS

are mighty workers—they do the work of six men—quicker and better. They have large strong cut gears and are equipped with the Novo Engine (which is entirely self-contained) and standard bilge pumps. Any working man can easily operate it.

Free Literature and Prices Upon Request

HILDRETH MFG. CO.

146 Willow St., Lansing, Mich.

Straight-grained cedar that cuts like cheese; smooth, tough leads that make clean-cut, strong marks—that's the way Dixon's Carpenter Pencils are described. Send 16c for generous sample lot 183J.

JOSEPH DIXON CRUCIBLE CO.
JERSEY CITY, N. J.

CALIPERS and DIVIDERS For CARPENTERS



We make several different styles, all good. Get our free Catalogue, No. 186, of the largest line of Fine Tools for all kinds of mechanics.



The L. S. STARRETT CO.
Athol, Mass., U. S. A.

NOTE—Our Special brand Clamps, have notches on the bottom of the bar, instead of on the top.

Per pair, 1 foot.....	\$2 70
" 1 1/2 foot.....	2 85
" 2 foot.....	3 00
" 2 1/2 foot.....	3 75
" 3 foot.....	4 00
" 4 foot.....	4 50
" 5 foot.....	5 00
" 6 foot.....	7 50
" 7 foot.....	8 50
" 8 foot.....	9 50
" 9 foot.....	11 00
" 10 foot.....	12 50
" 12 foot.....	14 00

These clamps have steel bars and screws and malleable iron parts.

The New Adjustable and Perfection Clamps are made in the following lengths and sizes:

2 1/2, 3, 4 and 5 foot have 1 1/2 x 1/2 inch bars.
5, 6, 7, 8, 9 and 10 foot have 1 1/2 x 1 inch bars.

Joiners' Clamps—1, 1 1/2, and 2 foot have hand-wheels for rapid work, 1 1/2 x 3-16 inch bars.

In ordering parts always make sketch, to avoid delay.

Write for circular
Dept. H.

Hargrave's New Adjustable SPECIAL Clamp.



Hargrave's Perfection SPECIAL Clamp.



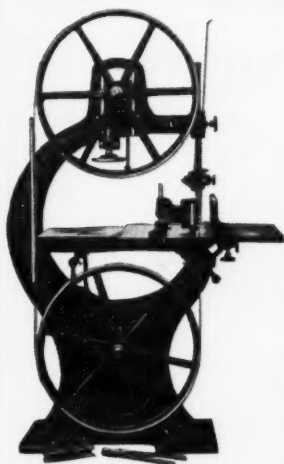
Hargrave's Joiners' SPECIAL Clamp.



THE CINCINNATI TOOL CO.,

CINCINNATI, O.,
U. S. A.

A Free Copy



Secrets of Successful Band Sawing by

Mr. Charles E. Wright,
The Acknowledged Exponent on
Band Saw Talk.

Would be mailed free.
Send for a copy before
our supply is exhausted.

We illustrate fifteen
new model machines.
Here is one, \$95 net,
complete with all im-
provements as shown in
cut. If you want a

machine to show economy in the general wear
and breakage of saws **here you are.** Our
catalog will tell you all about it.

The Chas. E. Wright Co.
317 Boulevard, Kenilworth, N. J.

The Only Self-Setting Plane

Over 25 years ago we commenced to make the Self-Setting Planes. They
are shovled in every state and Canada. Thousands of carpenters use them
doing work easier, better, quicker, saving time, trouble and temper.



Every issue of this paper has had our
ad. in it. If not sold in your town, we will
send you a Beech wood plane on trial
on receipt of one dollar less than list
price, and if you return it at our expense
within 30 days of receipt we will refund
your money. If you want more than
one we will allow you dealers' discount.

In writing, if you mention this paper
and send us the addresses of 10 plane
users—no matter where they live—we will send you a carpenters' hard tough
pen. If you send us a 2-cent stamp we will send you two pencils.

Remember this trial will cost you nothing if you return the plane at our
expense, as per circular. We will not knowingly send to consumers where our
planes are being sold. This offer is good while this ad. appears.
This paper guarantees that the Gage Tool Co. will do as their advertisement
states.

GAGE TOOL CO., Vineland, N. J.

THE FOLDING DRAW KNIFE

Now the Folding Handle Draw Knife
Comes to workman as a boon;
There is nothing that's so handy
And it did not come too soon.



If your hardware dealer does not keep it, we
will send it to your address postage paid. : :

**A. J. WILKINSON & CO., 180 to 188 Washington St.,
BOSTON, MASS.**

Write Us Now For Free Samples of Johnson's Artistic Wood Finishes



Johnson's Wood Dye

is not a mere surface stain—but a deep-
seated dye, penetrating the wood and
fixing a deep, rich, permanent color
entirely different from ordinary stains,
which are only "skin-deep."

Made in the following fifteen attractive shades.

No. 126 Light Oak	No. 131 Brown Weathered
No. 123 Dark Oak	Oak
No. 125 Mission Oak	No. 132 Green Weathered Oak
No. 140 Early English or	No. 121 Moss Green
Manila Oak	No. 122 Forest Green
No. 110 Bog Oak	No. 172 Flemish Oak
No. 128 Light Mahogany	No. 178 Brown Flemish Oak
No. 129 Dark Mahogany	No. 120 Fumed Oak
No. 130 Weathered Oak	Half Gallons—\$1.50 each

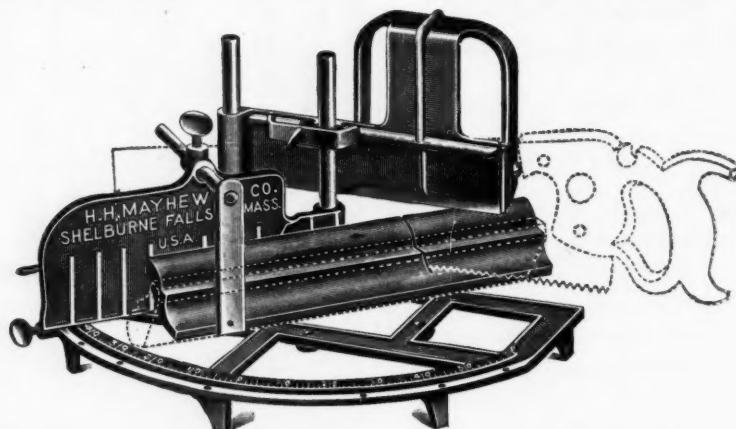
When used with Johnson's Prepared Wax
or Johnson's Under-Lac, inexpensive soft woods
such as pine, fir and cypress, may be made as
beautiful and artistic as costly hard woods.

Ask your dealer for free samples of any
shade of Johnson's Wood Dye and Test it,
or write us and we will send them from Racine,
Free Instruction Book, Edition A. C. B. 7, Sent on Request also.

S. C. Johnson & Son, Racine, Wis.

"The Wood Finishing Authorities"

MAYHEW 60° MITRE BOX



This box embodies more distinctive features than any other made

Designed for Simplicity, Accuracy, and Durability.

Strictly a right hand tool for mitering.

Box embodies a new feature in reversing the principle commonly used on other boxes.

Any of three saws may be used — Panel — Hand or Back saw.

Saw guide adjustable for any thickness of saw.

Extreme mitre to 60° without makeshift. May be used as a stationary or pivot box by use of the pin posts.

In mitering duplicate cuts there is no restriction on length.

Will cut compound mitre.

Parts take down into space 10x10x4 inches.

Weight 15 lbs. complete.

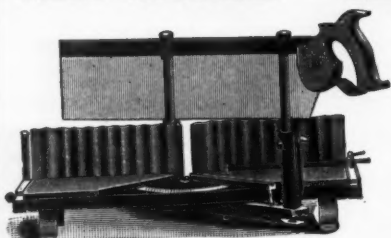
Box contains full directions for use.

PRICE EACH, \$10.00

H. H. MAYHEW COMPANY, SHELburne FALLS, MASS.

GOODELL MITRE BOX

Made of STEEL - Cannot Break



First in Quality and Improvements

Automatic Stops for holding up saw.

Corrugated Backs Graduated.

Gauge for duplicate cuts and many other features

Send for Circular "C"

GOODELL MFG. CO., Greenfield Mass.

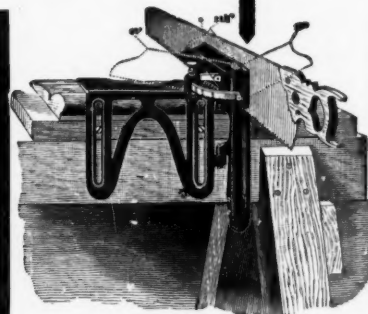
"SEAVEY" MITRE BOX

Cuts Any Angle

Meets Every Requirement

Special Offer

On return of this "Ad" and \$2.00 one of these Mitre Boxes will be shipped to any reader of "Carpenter & Builder." Offer good for 30 days from date of issue.



Portable — Can be carried in the Tool Kit

Weights 2

Pounds

SMITH & HEMENWAY CO.
150-152 Chambers St. New York City

LUFKIN Tapes & Rules

are Standards of Accuracy, Durability and Workmanship.

SEND FOR CATALOG

THE LUFKIN RULE CO.

SAGINAW, MICH.

NEW YORK
LONDON, ENG.
WINDSOR, CAN



PREVENT COLD WATER PIPES SWEATING

Careful consideration should be given to the proper insulation of Cold-Water Pipes. In high class Office Buildings, Apartment Houses, Hotels and similar buildings, considerable damage results to plaster, furnishings, etc., through condensation dripping from unprotected pipes.

J-M Anti-Sweat Pipe Covering

is the most economical and efficient insulation for the purpose.

It is made of alternate layers of water-proof and insulating felts, so that the covering cannot become water soaked through leaky joints and lose its efficiency. It positively prevents sweating.

COLD WATER DRINKING SYSTEMS

J-M Anti-Sweat Pipe Covering 1 inch thick, for insulating cold water drinking systems, can be depended upon for satisfactory results. Write nearest Branch for Booklet.

H. W. JOHNS-MANVILLE CO.

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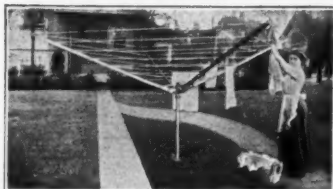
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CHICAGO-SUN CLOTHES DRYER

FOR LAWN USE

Eliminates Clothes Posts, is portable and can be removed when not in use. Holds 165 feet line. Each arm operates independently. When opened, arms lock in position and stretch lines. When closed, arms lock in position automatically. Best, most convenient and satisfactory lawn dryer made. Laundress can stand at one spot and hang all the clothes. No need lugging clothes basket or wading through wet grass when using the Chicago-Sun Clothes Dryer. Write for free folder No. 28.

THE CHICAGO DRYER CO., Dept. 28, 624 So. Wabash Ave., CHICAGO, ILL.

Don't Ask the Dealer for Sash Cord. Ask for

"SILVER LAKE"

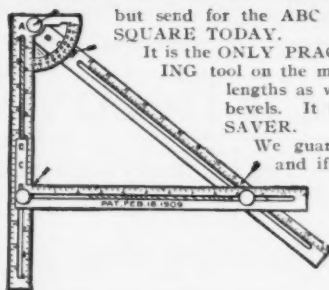
and see that he gives it to you. It is impossible to



substitute, as our name is stamped on every foot of cord. Silver Lake Sash Cord is the Original Solid Braided Cotton Sash Cord, and has been the standard since 1868. No other is just as good.

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but send for the ABC PROTRACTOR SQUARE TODAY.



It is the ONLY PRACTICAL FRAMING tool on the market and gives lengths as well as cuts and bevels. It is a great TIME SAVER.

We guarantee the tool, and if not satisfactory return it in 30 days and get your money back.

Price with illustrated directions \$2.00. CROOKSTON, MINN.

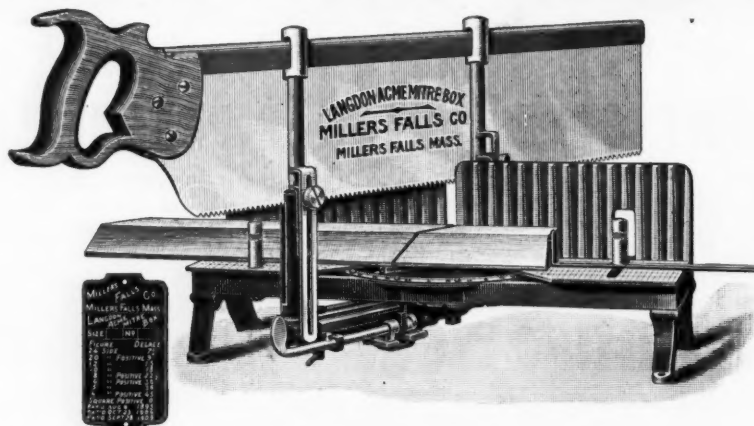
Crookston Tool Co.



Send us two or more names of persons who are interested in or want to buy Hot Water Heating Plants and we will send you this scale. Back inches are divided into 6, 10, 12, 16, 20 and 40 parts. Also free catalog on request. Mention this paper.

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These Mitre Boxes, when supplied with back saws fitted by ourselves, are warranted to give better service than any similar tool on the market.

There are a dozen improvements over the ordinary mitre box in the LANGDON ACME that insure quicker and more perfect work than any tool of its kind.

Some of the advantages over older models are: In longer guides, which hold the saw steadier, and these guides are provided with elevators to hold the saw stationary, when desired, above the work;

In a graduated arc showing the various angles commonly used;

In supporting guides to hold the work in place;

In an appliance for quicker adjustment of extension lever;

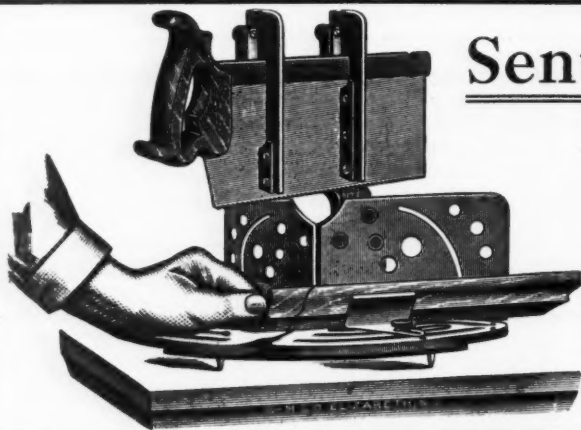
In a length gauge for duplicate lengths.

There are other improvements—impossible to describe because of lack of space—which are explained in our catalog.

These boxes are made in three sizes and put up with varying sizes of saws, ranging from 22 x 4-inch to 30 x 5-inch.

Send for the Free Book, "Tool Practice."

MILLERS FALLS CO., 28 Warren St., New York



Sent on 10 Days Trial

The Famous Dorn Revolving Miter Box. Will saw compound as well as plain miters any width with a back saw 4 inches wide.

Price \$10.75 Without Saw

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ELIZABETH, N. J.

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CATALOG

10th Edition

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Toolsmiths

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Pages of Tools

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Guided by its circular rim—instead of its centre—the Forstner Labor-Saving Auger Bit will bore any arc of a circle, and can be guided in any direction.

Doesn't matter how hard the wood is, no consequence whether it is full of knots, or the grain awkward to negotiate. The Forstner Bit works with equal smoothness under any condition and leaves a true polished surface on every job.

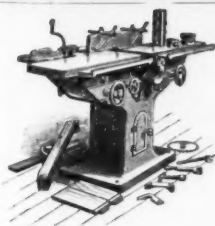
Unequaled for Delicate Work

Supersedes chisels, gauges, scroll-saws, or lath tools combined, for all kinds of delicate work. Cabinet and pattern makers and carpenters are enthusiastic because they do more work than other bits and cost no more.

We can offer something special in the matter of price on sets packed in a sensible box. Send today for particulars and catalog.

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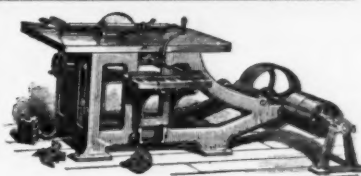
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Same as the No. 30, but with a Spring in the Handle that drives the Spindle back, ready for the next push. A great advantage for overhead work or where only one hand can be used. Takes all the Attachments used in the No. 30.

Have You Seen the "YANKEE" Line?

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Your Hardware Dealer Sells the "Yankee"

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PHILADELPHIA, PA.



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No Nails No Screws
Just Bore 4 Holes

The time saved by the "Grand Rapids" will actually pay for the pulleys.

You can't afford to use old style pulleys.

Write for free samples and prices.

Grand Rapids Hardware Co.
Manufacturers
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This fastening is more secure than any number of screws or nails could make it. Saves about 15 per cent. too.
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We Have An Attractive Proposition For One Carpenter Or Builder In Every Community To Take Orders For Our Widely Advertised

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ARCHITECTS EVERYWHERE SPECIFY THIS ATTRACTIVE ROOFING

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By using our

Ventilating School Room Heater

For
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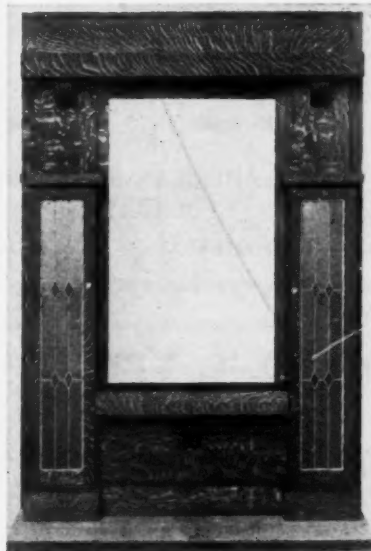
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Send Plans
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It contains many
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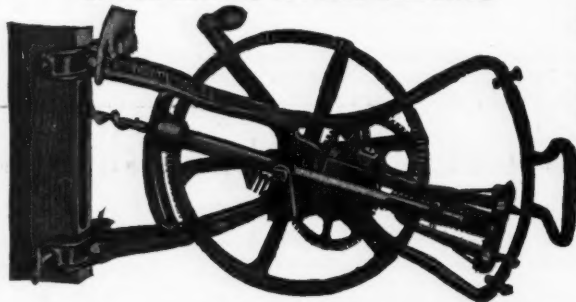
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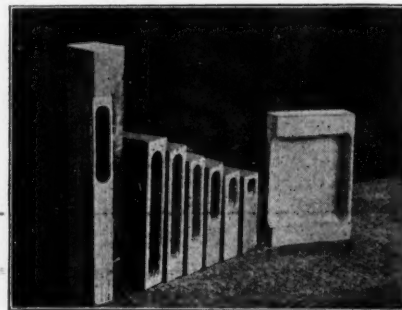
This bit moves up and down while boring.



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Made of Malleable.

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After that you'll always use and recommend them.

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The Phoenix Sliding Blind Co.

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Economy!

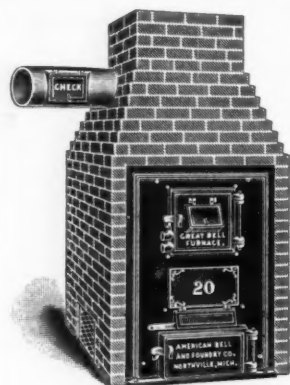
Convenience!

The latest improved springs and corrugated steel rods put the "PHOENIX" far in lead of less improved styles. Write for Catalogue "C" and free samples, showing construction.

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For Less than \$50 Complete

For 5 and 8 Room Dwellings

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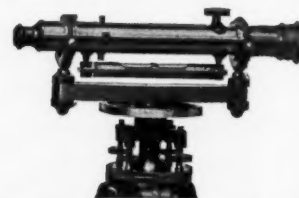
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If not, use a

WHITE'S IMPROVED BUILDERS' LEVEL

Which will guarantee you against errors. Offered for the next 30 days at \$40. Write for Circular "C," giving full information.

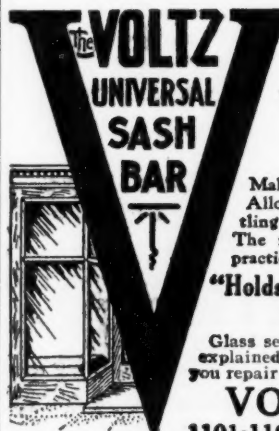
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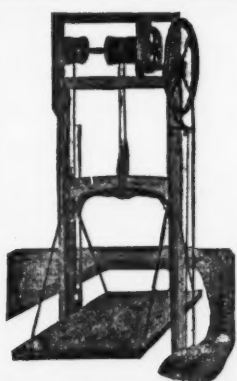
Makes any angle. Allows for the setting of building. The most beautiful, practicable and durable Bar in the world.

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Glass set from the outside. More good features explained in our catalog. Send for a copy before you repair or build. Write today.

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Mechanically Correct

Dumb Waiters, Carriage and Store Elevators, Sidewalk Hoists, Etc., Etc.

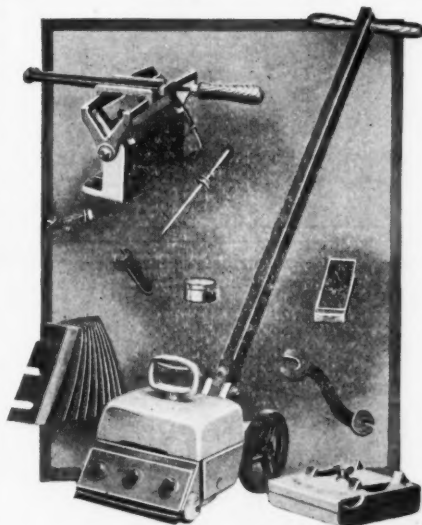
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State your requirements, giving capacity, size of platform and number of feet to travel and we will name our lowest money saving estimate.

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The Acme Floor Scraping Outfit



An equipment that has revolutionized the work of floor scraping. It is a time and money saver, and is guaranteed to do perfect work.

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Complete
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AUGER BIT ESSENTIALS THE SIXTH FEATURE

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RUSSELL JENNINGS BITS



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It is the correctly formed clearances that enable the carpenter having a Russell Jennings bit to bore a smoother hole, bore it easier than with any other bit, and bore it more accurately as to size. The painstaking care put into the formation of clearances is returned a hundred fold to the user of our bits.



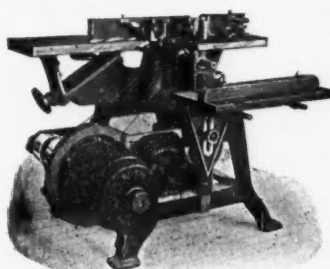
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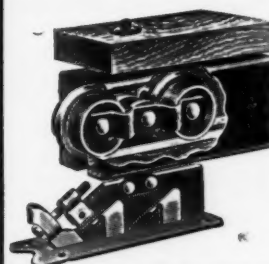
to drive it individually. You will be pleased. You will be gaining some profitable experience in economy.

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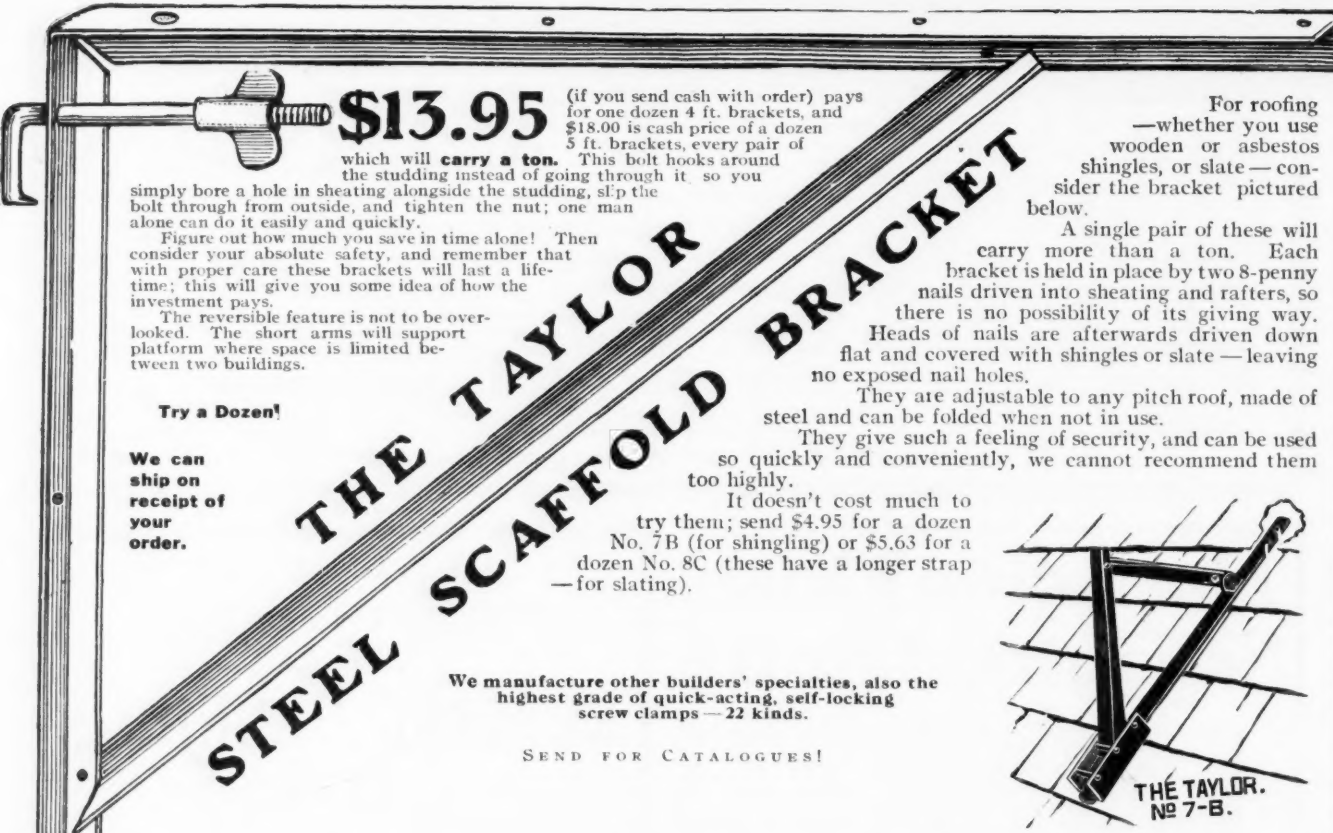
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Work easily on heavy doors too—that's why most builders always ask for them. Their experience counts.

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\$13.95 (if you send cash with order) pays for one dozen 4 ft. brackets, and \$18.00 is cash price of a dozen 5 ft. brackets, every pair of which will carry a ton. This bolt hooks around the studding instead of going through it so you simply bore a hole in sheathing alongside the studding, slip the bolt through from outside, and tighten the nut; one man alone can do it easily and quickly.

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The reversible feature is not to be overlooked. The short arms will support platform where space is limited between two buildings.

Try a Dozen!

We can ship on receipt of your order.

THE TAYLOR STEEL SCAFFOLD BRACKET

For roofing—whether you use wooden or asbestos shingles, or slate—consider the bracket pictured below.

A single pair of these will carry more than a ton. Each bracket is held in place by two 8-penny nails driven into sheathing and rafters, so there is no possibility of its giving way. Heads of nails are afterwards driven down flat and covered with shingles or slate—leaving no exposed nail holes.

They are adjustable to any pitch roof, made of steel and can be folded when not in use.

They give such a feeling of security, and can be used so quickly and conveniently, we cannot recommend them too highly.

It doesn't cost much to try them; send \$4.95 for a dozen No. 7B (for shingling) or \$5.63 for a dozen No. 8C (these have a longer strap—for slating).

We manufacture other builders' specialties, also the highest grade of quick-acting, self-locking screw clamps—22 kinds.

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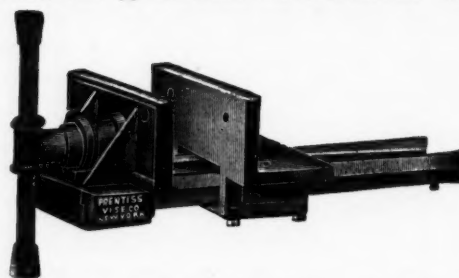
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The best is the best and the cheapest is not always the cheapest. Builders who have used the most dumb waiters and hand power elevators agree that those made by the Sedgwick Machine Works are the best and if results are considered, that they are the most profitable to handle. Some builders buy the Sedgwick Machines only and build the balance of the outfit themselves. Others find that it is more convenient to let the Sedgwick Machine Works supply the complete outfit, as it is manifestly impossible to make one dumb waiter at cheaply as they can be made a hundred or a thousand at a time.

Send at once to the Sedgwick Machine Works, 128 Liberty Street, New York, for their Catalogue "K" which will be mailed you free and you will then have for reference a catalogue from which you can select just what will best suit your requirements.

BLAKE QUICK ACTING VISE



For Cabinet Makers and Wood Workers. Simplest—Strongest—Cheapest—Best

Send for Catalogue of all kinds of Vises

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SEND no money—just mail us your name and address. Your book will reach you by return mail. Keep it 5 days—use it—then either send one dollar or return the book.

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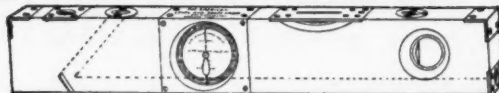
EVERY MAN IN THE BUILDING TRADE NEEDS IT

Name.....

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All progressive and up-to-date Carpenters, Contractors and Mechanics should have one of our levels and grade finders.

An instrument with which at one glance you can get the true slant on any line or grade, either in degrees, inches or percentage, or all at one time, and will at once give the exact distance needed to plumb up to a true level.

The most practicable, durable and convenient instrument of the day.

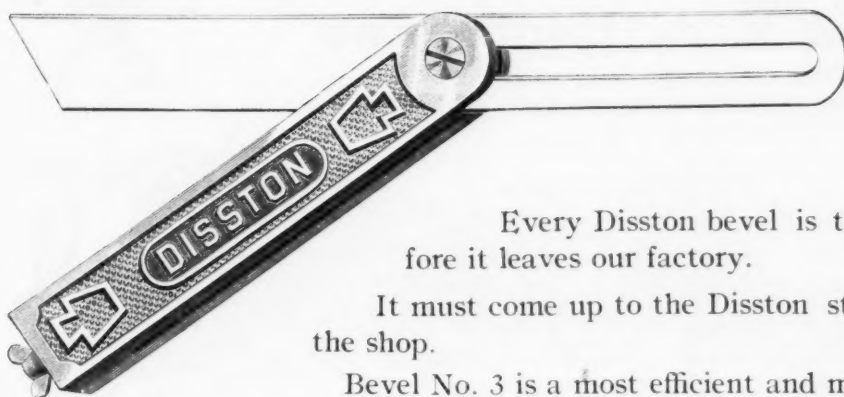
In addition to ordinary mechanical work the American Combined Level and Grade Finder will prove serviceable in cutting off rafters, laying off and leveling buildings, getting height of any object and is useful in dozens of ways.

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No. 3

Every Disston bevel is thoroughly inspected before it leaves our factory.

It must come up to the Disston standard before it leaves the shop.

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Made of Disston Crucible Steel. Iron stock, flush screw and parallel edges.

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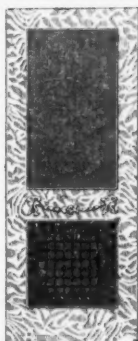
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Our screens are made from kiln dried lumber and have waterproof coped joints and the frames are weather proofed before finishing coats are applied.

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The new "Ironwood" screen is the cheapest good custom made screen yet produced. Intending purchasers may have free, by mail, samples of woods, finishes, wire cloth and a copy of catalogue. Agents wanted in smaller cities.

Special terms to contractors and builders.

A. J. PHILLIPS & CO., FENTON, MICH.
28 YEARS' EXPERIENCE 3 1-2 ACRES FLOOR SPACE

DON'T PUT SASH WEIGHTS ON YOUR WINDOWS—THEY ARE OUT OF DATE

The "AUTOMATIC" SASH HOLDER

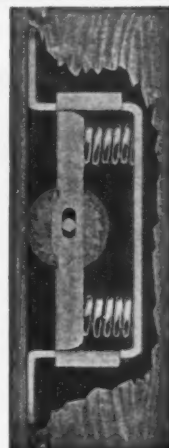
The "Automatic" Sash Holder is the new, modern, up-to-date device that dispenses with cumbersome sash weights, kinking cords or ribbons, useless weight pockets, misfit pulleys and reluctant balances, and saves all the time, labor and expense of fitting them in.

Prevent rattling and permit the window to be moved up and down with ease. Hold it safely at any point desired.

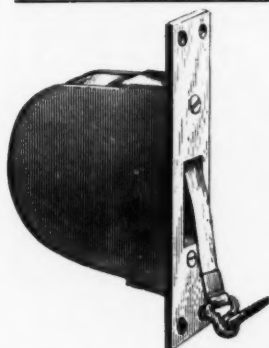
Sold by hardware dealers or direct from us. Correspondence solicited. Representatives and side lines travelers wanted all over the world.

Automatic Sash Holder Company

277 Broadway, New York City.



CALDWELL SASH BALANCE



Does away with weights and cords, and VASTLY more durable.

Makes sashes work perfectly.

Permits greater window space in new work, as box frames are not necessary.

May be applied to old windows without altering sashes or frames.

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Caldwell Mfg. Co.
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BOVEE FURNACES at Manufacturer's Prices

SAVES 50 PER CENT OF COST; 40 PER CENT OF FUEL
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RESIDENCE HEATING PLANT

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Special Price, \$65

CHURCH AND SCHOOL HEATING PLANT

One large hot air, two cold air registers, 54-in. Furnace, 32-in. Fire Pot, 40-in. Combustion Chamber, 40,000 cubic feet Heating Capacity.

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Makers of

Fine Hand Made Hand Saws**The Purest of Quality Our
"GREYHOUND" Hand Saw**

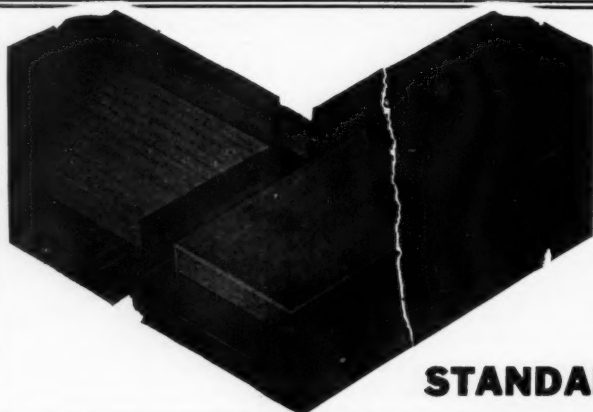
IN introducing our "GREYHOUND" brand of Saws to the trade, we have departed from our usual custom in naming instead of numbering the saw. This saw will be known as our "GREYHOUND" and will be the only Bishop brand of saw known by name.

We have had a Chemist experimenting for years to originate a purity of steel with a fine grain and tough body that would stand up under such a fearless warranty as we place on our "GREYHOUND" brand of saws. We now have it. We know its worth as well as its value. As workers of steel we understand it. We had to name it and we have christened it Bishop's Refined "GREYHOUND" Steel, associating our trade mark with its name. We have in this "GREYHOUND" Saw blade a purity of steel that is tough, tempers accurately and even—together with the special way it is made—enables us to guarantee that this "GREYHOUND" brand of Saws will cut faster and run easier in all kinds of wood, hold its sharpness and set longer than any other makes of good Saws in the world. We Refund the Money if 30 days' trial does not prove our guarantee. Our pride is quality with an honest opportunity for the purchaser to judge. Each Saw is tagged with our warranty on it. No expense has been spared to make this Saw the most perfect in the world. We invite correspondence with anyone who has our "GREYHOUND" brand of saws in use.

Made in both straight and skew back. Packed One in a Box.

In workmanship this saw possesses all the skilled mechanical features known to the art of saw making. The hang of the blade has been carefully studied and adjusted, to suit the fancy of the most critical.

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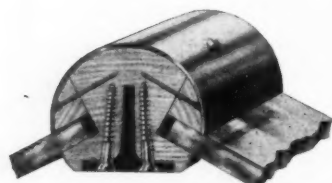
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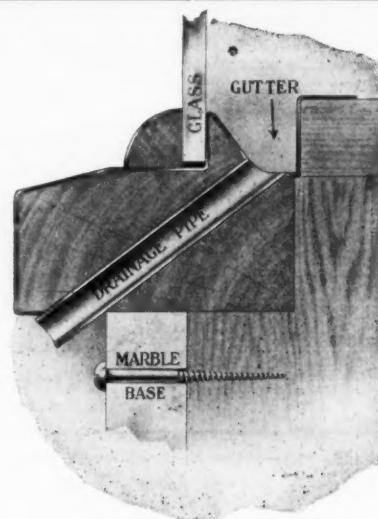
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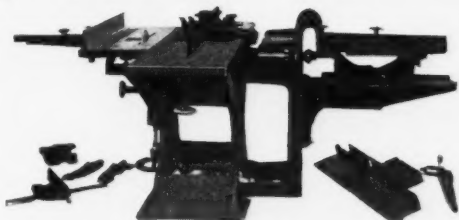
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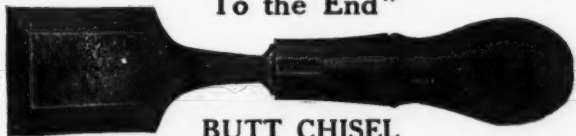
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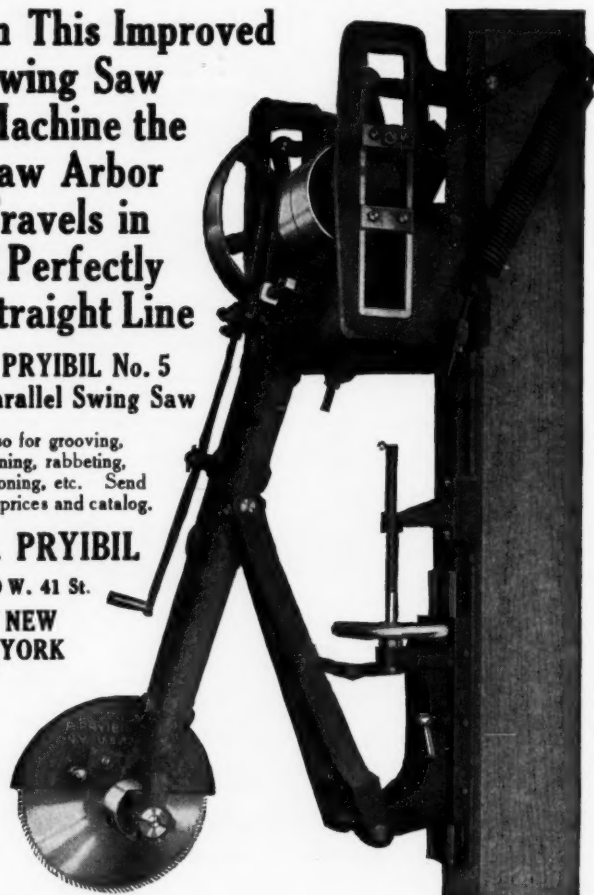
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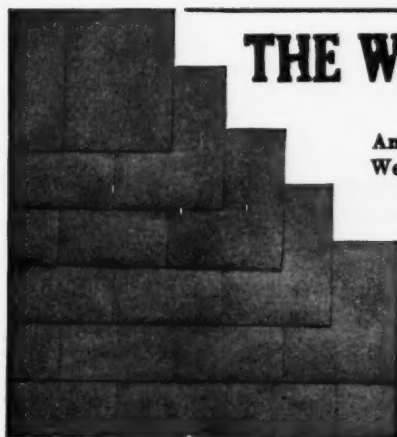
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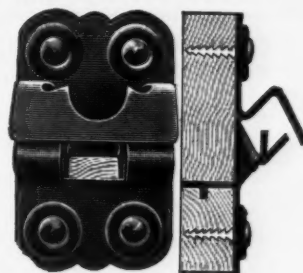
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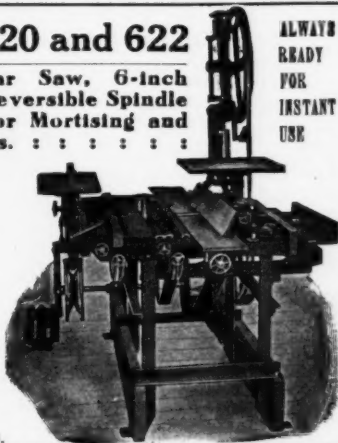
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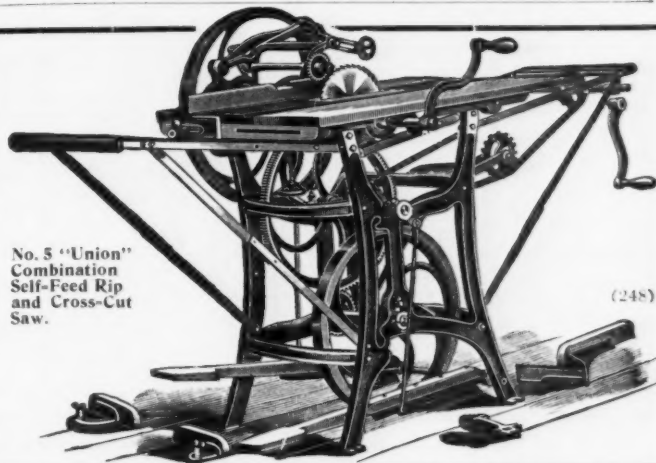
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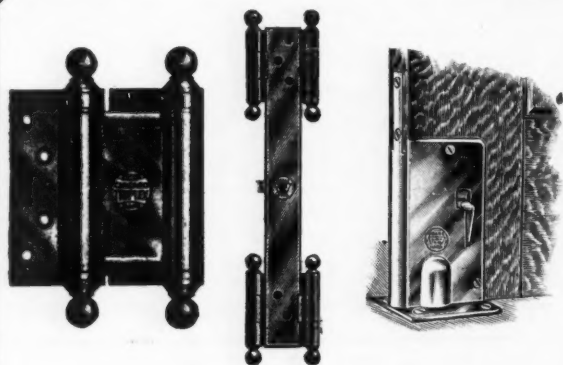


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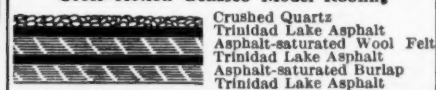
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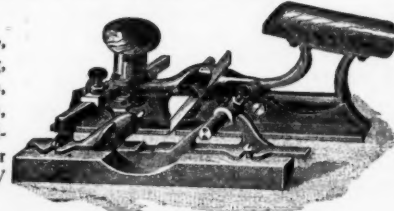
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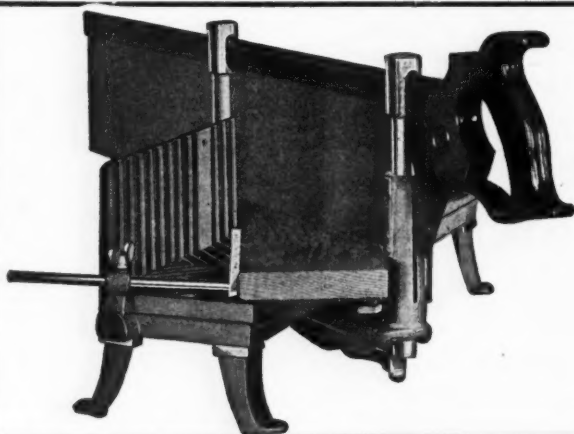
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American Carpenter and Builder

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VOL. XI

JULY, 1911.

No. 4

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Contractor Too Often "The Goat"

CASES of excessive or improper demand upon building contractors by architects and owners are of rather frequent occurrence. A recent case coming within the category of "unfair demands" is described as follows: In the specifications for a building to be erected in a certain city, explicit requirements were made for certain portions of the work, which requirements proved to be less than the city ordinances demanded, and thereupon the architect took the stand that no matter what the specifications recited, the ob-

ligation was on the contractor to fill up all deficiencies between the specifications and the ordinances, under the general and usual stipulation that "the contractor must take out such permits and conform to such rules and ordinances as are required or established by the municipal authorities." The contractor demurs, contending that this general rule applies only to matters like permits for use of the streets; in regard to such conduct of the work as will insure safety to the public, etc., etc., and does not apply to construction requirements. To this the architect replies that it is plainly the duty of the contractor to know in every detail what will be permitted in the proposed structure, and, having signed a contract with this general clause in it, he *must*, without extra payment by the owner, bring the structure in all its parts up to the requirements of the law and ordinances.

The secretary of the Master Builders Association of Boston, in commenting on this stamps it as an extraordinary and most indefensible demand on the part of an architect, which should be vigorously resisted.

The function of the architect most assuredly comprehends a study of the laws and ordinances of the city in which his client, the owner, proposes to erect a building, and in preparing the specifications and plans for the structure, the architect, and the architect only, is responsible for their conformity with the laws governing the construction of the building as a whole and in every detail of its various parts.

To expect that builders who are entering into competition for proposed work are to pass upon the competency of plans and specifications to meet the requirements of laws in regard to construction, with all the variation that implies, is absurd to the last degree, and it is difficult to conceive how even the most inexperienced architect could take such a stand. Such a method of remedying the mistakes and omissions of the architect is on a par with that familiar device of a certain practitioner in this city, who sometimes introduced this clincher in his specifications: "Any other work or materials necessary to complete this structure to the satisfaction of the owner and architect shall be done and furnished by the contractor without additional charge."

Insurance and Workmen's Dwellings

THE investment of the funds of insurance companies, the security of which was under some doubt a few years ago, has reached a new and interesting phase in the authorization by the directors of the Metropolitan Life of a mortgage loan of about \$650,000 for the erection of small dwellings in Brooklyn. While insurance money in Europe has long and successfully been employed in such manner, this is, according to the *Chicago Tribune*, the first time an American company has made an investment of the kind.

It is proposed that a building corporation erect two-story brick dwellings, each with seven rooms and a bath, to cost \$5,500. The dwellings are to be semi-detached and the lots are 24 by 100 feet. The company will place on the house a first mortgage of \$3,250 at 6 per cent, running twenty years, and payable in semi-annual installments. At the end of that time the property will be free and unmortgaged.

If the purchaser wishes, he may have a life insurance policy of the single premium term type with diminishing amounts of insurance. The single premium is paid in advance and should the holder die within twenty years his mortgage is released. When the mortgage is paid up his policy expires.

Vast sums of money in Germany and Belgium are invested by insurance companies in similar ventures. Their charters permit it and the government encourages the establishment of workmen in better housing conditions. Some of the handsomest buildings in German cities are the tenements built in this way. It may be that this experiment of the American company will be the beginning of better town planning and town building which many wish for so sincerely.

At any rate the policy holders of American insurance companies would as lief see their money invested in workmen's dwellings as in the stocks and bonds of some industrial corporations.



Architectural Copyright

AN unusual lawsuit is reported in France, where the heirs of the late Jean Lenoir, an architect, are suing certain alleged plagiarists for having copied the plans their father drew for a casino at a Brittany seaport. They base their suit on the French copyright act of 1902, which was aimed to protect painters, sculptors and engravers.

According to the recitation of facts, M. Lenoir in 1887 built the casino in question. He always liked the design, and upon returning to the district a year or two later was startled to find it exactly reproduced at an adjoining resort. Only here the building was used for a private sanitarium instead of a casino. Examination convinced him that the copy was perfect—almost "stone for stone." He, therefore, had large blueprints made setting forth the exactness of the

plagiarism and his heirs are presenting them in court. They hope for heavy damages.

It is an interesting legal case, probably. But, ethically, if the facts are as alleged, the court's ruling must be as clear as it would be in the case of any other form of plagiarism.

We could wish that some such general law could be established in this country, especially with regard to copies of foreign masterpieces. If we could have fewer diluted imitations of French and English residences, or if we did not try to pattern our skyscrapers upon the temples of Rome—if we created instead of copied—we might be a good deal nearer than we are today to establishing a national architecture of our own.



Learn the Trade Thoroughly

THE following letter written to *The Carpenter* is one that all the older workmen will appreciate, and all the young men should take right to heart:

"In telling of my work and what some might call a failure, I hope to be able to influence some of our boys to take up some line of work or trade and learn it thoroughly, master the details and then stick everlastingly at it.

"Though my work at the carpenter trade cannot be called a failure, it cannot be called a brilliant success. Where I made the greatest mistake was that I did not thoroughly learn my trade. As far back as I can remember I had a desire to build something, not always a useful article, perhaps, but as a boy I was always trying to construct something.

"The first time I and another carpenter shingled a large roof, knowing something of the work from experience on small buildings, I thought I had what might be called a working knowledge of it. We chalked the line and snapped it twice and I began to lay shingles. The roof was partly shingled. I laid only one course, paying no attention to the second line, in fact I had no idea why it was there. The other fellow wanted to know if I intended to lay two courses. I was just ready to say, 'No, I couldn't shingle that way,' but on second thought I concluded it might be wiser to keep still and learn something, so answered, 'I guess so.' By this time I looked to see what he was doing and found out what the line was for. It has been like this many times since. Many times I have been able to avoid confessing my ignorance.

"One way I had of doing sometimes was to be very busy until I could learn how a certain thing should be done. I most always found a man would wait a few days and by that time I knew what I wanted to do for him. One day I asked a fellow workman how to lay out rafters for a building. After explaining the work, he wanted to know how I had done so much in that line. I had to confess I had taken two sticks and set them up, raising them until they seemed steep enough, then marked down through the middle and at the bottom. This gave me the pattern by which to cut the others.

"My first work of importance was building my own home. I did this myself, even to laying the cellar wall. There are mistakes in the work, yet the fact that I had built it brought in more work. Some of this work was very puzzling to me, owing to a lack of experience. And so on all through my life, if I had mastered the trade thoroughly it would have been much better, and I know from experience, sometimes dearly bought, that this is the only way for a man to do."

Another Church Built in a Day

AN INTERESTING RECORD OF ANOTHER RAPID-FIRE BUILDING OPERATION, THIS TIME IN CALIFORNIA

By Edward P. Bailey

PEELED of coats, ties, collars and other wardrobe superfluities, about one hundred and twenty-five emergency-for-the-occasion carpenters and near-carpenters recently established at Long Beach, Calif., the remarkable record of building a church structure complete in eight hours.

At 8 o'clock in the morning there was nothing on the church lot at Obispo street except a brick founda-

tion on the ground about sixty members of the Long Beach Carpenters' Union, No. 710. They came with their tools, overalls, and a determination to assist in the erection of this place of worship. There also gathered men who were carpenters only for a day, about



9:00 A. M., Foundation In

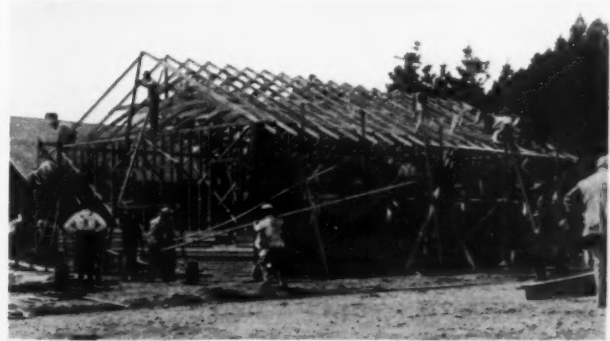
tion. The afternoon at 3 o'clock there was a healthy looking edifice which is to be occupied as a place of worship by the Christian congregation of East Long Beach. The church is substantial and the work of



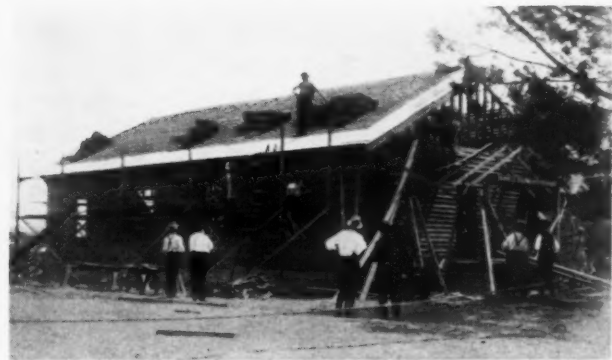
9:30 A. M., Wall Framing Being Raised

one day may stand as a monument for many years. The building faces west, and is on the corner. There are pine trees and a rich floral growth all about it. The structure is of the bungalow type, 30 feet wide and 50 feet in length, with an arched ceiling, and a rustic portico sheltering the front entrance.

At 8 o'clock in the morning there had assembled



10:30 A., M. Rafters in Place



Noon, Weather Boarding and Shingles On



3:00 P. M., New Christian Church, Long Beach Calif. Completely Finished

sixty-five in number. They brought hammers, saws and any other tools they happened to have; and they worked as earnestly all through the day as the old heads at the business.

Rev. Mr. West, pastor of the new church, also donned his new overalls and drove nails all day.

(Continued to page 45)

Shop for Sale

A REAL HUMAN INTEREST DOCUMENT NARRATING AN ACTUAL CASE OF HOW SUCCESS WAS WROUGHT OUT OF FAILURE IN A MACHINE WOODWORKING SHOP

By George Rice

ONE morning while out on a little privately conducted trip of exploration to see if I couldn't scare something up, I noticed a sign in front of an old woodworking establishment, "Shop for Sale." I had had experience in the woodworking business and was entirely willing to buy a woodworking plant—if they would trust me for it—or to get a position in one. So I entered the gate and soon found the watchman, who took me over the place.

I could readily see that the plant was run down. The engine was in bad condition. The bearings of the shafting carrying the balance wheel and the shafting of the driving belt overhead were in a worn and sagging order. The leather belt was left on the flywheel rim and the driven pulley above; and this showed that the former workmen were careless with the belting, and I judged quite rightly that the belting throughout the mill would be in a condition similar to that on the engine. And so it proved. I saw that practically all of the belting would need an overhauling and that in some instances new belting would be needed.

The watchman took me through the various departments of the plant. The machinery was calculated for the making of the usual line of sash, doors and related house building materials. There was a department in which cabinets were made on orders from a store in the city. Another specialty was clothes pins. I devoted the entire day to examining the plant and then arranged to go over the place with the owner the next day.

The owner was on hand and told me he wanted to sell out because his son had bought a ranch out west and had invited him to come and live with him. So he went over the mill with me, and made the usual line of excuses for dirty machinery, accumulated rubbish, dull cutting blades, wrecked belting, irregular shafting, broken windows, rusted machines and the

like. But I did not care so much about that, as I knew that with a number of good workmen I could fix things up in a few days. I did not object when I almost fell through a hole in the floor, and we considered it quite funny



We Considered it Quite Funny When we Found a Step in the Stairs Broken



when we found a step on the stairs broken so that we had to jump the step. The fact that one of the important machines next a window was partly ruined because of the rains which had gotten through the broken window panes, did not appear to concern the owner of the plant very much.

However, we fixed on a bargain and for a certain cash payment, with an agreement to pay so much per month from the proceeds of the mill, the papers were duly made up and signed and I became sole owner and boss.

I started in at once to hire workmen. There were many applicants and I had no trouble in getting some experienced men at moderate wages. The foreman I hired got drunk the third day and fired the watchman, and in turn I had to discharge the foreman, although he was a skilled workman.

We may pass over the first months trials. We had to overhaul everything. It seemed like a hoodoo plant at first and many times I was discouraged. We lost much time in setting things to rights. The boiler gave out and when we removed the head we found that two of the tubes were plugged with wood, because the tubes were split and new tubes should have been put in. It cost me \$75.00 to get the tubes in and then there was the loss of time.

Schemes for Getting Business

I was paying out money all the time and getting little in return. But I had a scheme in mind. I observed that considerable building was going on in the surrounding country. Just as soon as I got the plant in working condition, and had put in a few new pieces of machinery, I hired a competent resident boss so that I might be able to go out and get business.

I rented an automobile and went at it. I made personal calls on contractors and builders. I rode out to every corner of the surrounding country and every time I saw any sign of house construction or public building erection, I proceeded to investigate. If there were signs of a store or factory putting up an addition, I would locate the same in my tours. I would obtain the names of the interested parties, and inquire what was going to be done. Then I would either make a personal call and offer prices and samples, or correspond with the parties, sending them circulars and typewritten information as to what I could accomplish in my mill.

I did some advertising in the trade press and the

local press and in a short time business commenced to come in.

I invited prospective builders to come and examine my methods of constructing work, and sent out post cards to carpenters and other persons interested in house building and general machine woodworking, with the result that I had quite a number of visitors at the works every day. Often these visiting parties would marvel over some of the special construction work I had underway and put me down as a crank. It was my custom to exhibit any special piece of interesting woodwork for a few days before delivering it. If the architectural design of the piece proved to be out of the ordinary, I found that to exhibit the same served as a sort of an advertisement for me. I catered to people who wanted unique design service for the hall, the lawn, park, library, den or other place. I fitted up some very odd pieces of constructive work for the interior of a den for a rich man. The pieces included some heavy roots of trees, finished with the original surfacing still adhering.

All this served to give me a standing among the merchants and others of the locality.

Remodeling and Special Jobs

I photographed the fronts of stores in which a moderate amount of business was being done, and then went to the owners with photographs and drawings representing how the store front could be remodelled up to date, so as to obtain more business. By this scheme I managed to keep two or three of my men at work very nearly all the time remodelling fronts of stores. We could tear out the dingy original structure, removing the narrow sash, and proceed by lowering the frontal exposure, and refitting the entire



Business Increased Soon as the Remodeled Front was Put in

show front with a larger plate that would reach almost to the sidewalk level. Business always really increased as soon as the remodelled store front was made. I secured letters of recommendation concerning this fact from all of the patrons whose store fronts I had overhauled, and with these letters, photographs, drawings and estimates of costs, had little trouble in getting contracts right along for doing work of this

kind. If business along this line fell off in the city, I went out into the surrounding towns and secured contracts.

I advertised among the inventors of the community for I had ascertained that there were many men thereabouts who were constantly rigging up new models of improvements, and these models were formed chiefly of wood until the designs could be perfected for making metal models. I put in a machine for cutting small wooden gearings, and after a time had several models of harvesting machines and other devices on exhibition in a showcase and these attracted attention.



Got the Local Editor to Mention the Fact

I sought to do everything in the woodworking line. Kept in touch with the requirements of the people of the community and did not let many jobs get by me, although I often was obliged to bid quite low on some of the work. There was an abundance of competition, and I had to meet it with lower prices and better work almost every time.

I made a point of keeping all of my work up to the contract and advertised and boasted of the fact that I used the best of selected stock in my work, except in the common and cheap lines. I sought to make the people understand that I employed the best kinds of hardware in all of my product; accordingly exhibited some types of high grade hardware in the show window and placarded it as the superior classes of builders hardware I invariably used.

I made it a point to hire men of the community who had a reputation for good workmanship. And furthermore I let the people know that I was using modern tools and modern machinery. I discarded some of the old machinery purposely, so as to have it be seen when going out and new machinery observed in process of being installed. I delayed the game as long as possible each time and got the local press to always mention the fact that so and so was installing additional new and modern woodworking machinery in his plant. All this helped me to get business.

I presented the editor of the principal local paper with a specially constructed typewriter and editor's desk and he put the same on show in the newspaper window for 30 days and I derived a number of orders for similarly constructed desks. I had experienced men to finish all my work in good form.

I will acknowledge that I worked hard for results. Gradually they came although there were many reverses. I had to lose a number of bills due from dead beats, and there were the usual disappointments that come to all men. But I worked on, and finally succeeded in getting the plant on a paying basis.

Sprinkler Systems for Fire Protection*

POINTS OF INTEREST TO PRACTICAL MEN CONCERNING THE CONTROL OF FIRES THROUGH SCIENTIFIC METHODS—"SLOW BURNING" CONSTRUCTION—AUTOMATIC SPRINKLERS AND HOW THEY WORK

By Edward V. French

(Vice-Pres. and Engr., Arkwright Mutual Fire Insurance Co.)

IN recent years much has been said and written in this country regarding the conservation of resources, and there is general unanimity of opinion that conservation is vital to the future welfare of the nation. In the United States property to the value of \$250,000,000 is, on the average, annually consumed by fires. This is absolute waste. Nothing is produced. If we cut our wood lands for lumber and paper we at least have something as a product, but the heap of ruins left by a conflagration is waste of the most extravagant and useless sort.

Manufacturers Have Reduced their Fire Losses

For many years the scientific method has been applied in a selected class of manufacturing properties. The result has been a reduction in fire loss to but a few cents per year for each \$100 of value in these properties. The work thus carried on has broadened with the growth of the country until it now includes a large percentage of the best manufacturing plants. It is one of the oldest and most successful examples of the conservation of resources.

About seventy-five years ago Zachariah Allen, a cotton manufacturer of Rhode Island, conceived the idea of studying causes of fires in cotton mills and devising means to prevent them. He interested a number of other manufacturers in this work and the basic principle upon which they coöperated was by intelligent study of conditions to prevent serious fires, and then to share such losses as occurred at actual cost. Self-interest encouraged the greatest care and secured the intelligent co-operation of all who joined in the plan. This was the starting point of what has now become the important specialty of fire protection engineering.

The early textile mills in this country generally had heavy brick or stone walls and substantial plank floors. They were frequently of five or six stories in height and had steep roofs, often covered with shingles. The usual power was from water wheels. They were heated by wood stoves and lighted by whale oil lamps. The cotton and greasy wool used created hazardous conditions. Fire protection was provided by rather crude plunger pumps, driven from the water wheels, a standpipe was carried up through the mill with hose connections at the different floors and casks and pails filled with water were placed at convenient points. The main dependence, however, was upon good care and the maintenance of such conditions that fires would not start.

*Portions of a paper presented before the Congress of Technology at the Fiftieth Anniversary of the Granting of the Charter of the Massachusetts Institute of Technology.

Principles of "Slow Burning" Construction

Of course fires did occur, and many bad losses were met by these pioneer fire protection engineers, but from each severe experience some valuable lesson was learned and the knowledge thus gained stored up for future application. It was early found that the old steep roofs with their inaccessibility and large amounts of fuel were especially hazardous features, and as they burned off, solid flat roofs of plank were provided, while many mills were induced to remove the bad roofs without waiting for a fire.

The advantage of good construction was apparent from the beginning and some mills in New England, though built over seventy-five years ago, still stand with floors of heavy plank and timber, and with stairways and elevators in brick towers. This type of construction early became known as slow burning, from the fact that the solid masses of wood in the timbers and plank resisted fire for a long time before sufficiently burned to be seriously weakened. Contrasted with this construction is the ordinary type using joists and thin floors, in which the surface exposed to fire is much greater than when plank and timber are used, and in which the wood is in such small pieces that a little fire quickly destroys all strength, thus resulting in a quick burning structure.

The need of having floors tight so that no vertical openings would exist through which fire could quickly pass from story to story was early recognized. It later became the practice to enclose the main driving belts in brick towers and in practically all of the older mills where the belts were originally carried from water wheels or engines through the floors, making considerable openings, incombustible partitions have been built around the belts so as to eliminate this danger. Special consideration was given to isolating hazardous processes.

First Attempts at Sprinkler Systems

One of the first improvements upon the primitive protection afforded by standpipe and fire pail came about 1850 in the development of perforated pipe sprinklers. These consisted of lines of pipe, one carried through each mill bay, drilled with small holes, designed to throw water against the ceiling. Branch pipes were connected to a feeder and all supplied by a riser coming up through the building, usually a separate one for each floor. Connection was made in the yard to a main supplied with water from the fire pumps or other sources, and valves in the yard controlled different sections. When fire occurred the valve controlling the water for perforated pipes in that section was opened and the whole room deluged.

The idea of such protection came from England and its possibilities were at once appreciated by James B. Francis of Lowell. He developed the idea, applying scientific methods and making many experiments on test equipments, thus determining the proper size of pipes and the best size and arrangement of holes so that a fairly uniform and very hard rain would be delivered over the whole of any protected room. Without such careful tests these pipe systems would not have been properly proportioned, with the result that some parts would be without water, while others would get too much, supply pipes might have been too small and the equipments would have failed.

The Automatic Sprinkler

As mills became larger and concentrated values greater better protection was needed. Ingenious minds had been working on the problem and in about 1875 the first automatic sprinkler was developed in shape suitable for general use. This device has revolutionized the whole science of fire protection and is the main instrument which has made it possible to control the fire hazard within the limits which are now possible.

In the automatic sprinkler there is an orifice of about $\frac{1}{2}$ -inch diameter normally closed by a valve which is held to its seat by an arrangement of levers, links or struts which are held together by fusible solder, the ordinary type melting at a temperature of about 160 degrees F. These sprinklers are placed over the ceilings of rooms to be protected, with a head for about every 80 or 100 square feet of area, and water is supplied to them by pipes arranged much as in the old perforated pipe systems. On the occurrence of fire the temperature near the ceiling rises, one or more sprinklers open and deluge that particular section where the fire is.

The great points of advantage which the automatic sprinklers possess over all other means of fire fighting are: They are on duty every hour of every day and every day in the year; the heads which open are those located just where the fire is; the open heads can operate regardless of smoke or other conditions which would make it difficult for men to reach the seat of the fire. Such protection can cover every nook and corner of a plant and insure that fire starting at any point will be almost instantly met with such a down-pour of water as to either extinguish it entirely or hold it in check within a small area until the last vestige is extinguished by the fire brigade.

Development of the System

The problem of devising and constructing automatic sprinklers has required much careful scientific work. The conditions are difficult. The device must be simple and rugged, but such that it can remain in repose for years and then respond within 30 to 50 seconds to the rise in temperature which a fire causes, and yet withstand the ordinary tendencies to corro-

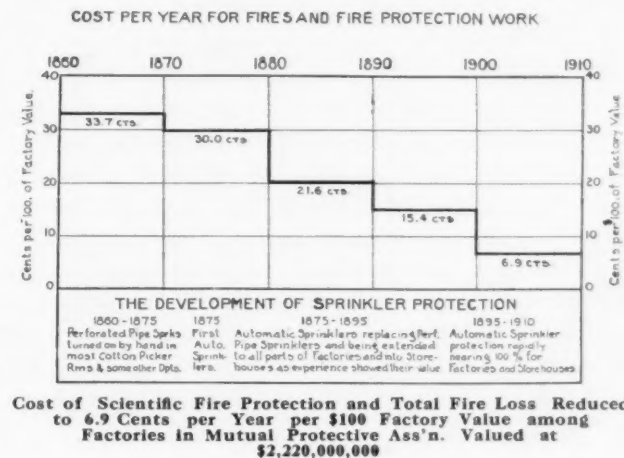
sion and the usual atmospheric changes. To accomplish this has proved no simple task and many hundreds of patterns have been offered, though there are today but six to ten heads which are commonly used. Much very careful laboratory work has been necessary in testing sprinklers. It was of the first importance to be sure that a sprinkler head would be operative after years of standing; again it was essential that it should not weaken by age and open when there was no fire, causing water damage. Time tests were devised in which sprinklers are kept under excessive load in order to determine in a few months the probable effect of years of use. Heads were artificially corroded to obtain a measure of their probable susceptibility to impairment under everyday use.

The first idea was that but a few sprinklers would ever be called upon at a time and that if these did not control a fire other means must be used. Experience, however, soon showed that sprinklers could do a larger work and that if supplied with ample water they could protect very large areas. In cases where buildings equipped with sprinklers were attacked by severe fires on the outside, flames were driven back by the water from the sprinklers and the protected building was saved with practically no damage other than that from water. This at once showed the need of providing pipe sizes which would be ample to bring water to all the sprinklers which might open in any case. To determine this wisely very elaborate tests were made in which the friction loss in pipes of different sizes used in sprinkler work was determined, as well as the friction loss in various types of fittings.

From the data obtained schedules were made, pipe sizes determined and the whole arrangement of sprinkler systems put on a sound basis which has now become the universal standard.

Fire Losses Cut Down

A diagram showing the fires which have occurred in the association of factories which have carried on this study of protection against fire, where the loss has been over \$100,000, shows that such fires came along with considerable frequency in the early days but that later when automatic sprinklers were largely



in use and other means of prevention and protection developed to a high state of efficiency, there was a marked lessening in the number of severe fires. This plotting, together with figures showing the growth in value of the mills thus co-operating, makes a graphic object lesson of the results accomplished by the application of scientific methods.

In another way the cost of fires, including the cost of carrying on this system of studying them and maintaining methods of protection, is shown, covering a period of fifty years by ten-year averages. This, though not made up from the whole field, is typical and fairly represents the result from all the factories co-operating in this study. This shows the constant reduction in cost, with the improvement in methods of handling the fire hazard. It should be remembered that this has been accomplished despite the enormous increase in size of properties and the introduc-

tion of many new hazards, which would normally increase the fire losses.

From this field of special manufacturing plants the ideas and possibilities of the thorough study of fire protection have spread and are now being rapidly applied by national organizations in a general field comprising the whole country.

The terrible loss of life which recently occurred in New York city and the loss of life and irreplaceable papers at Albany could have been prevented by methods long since adopted in hundreds of manufacturing plants. But slowly does the scientific spirit penetrate the broader field where so many diverse interests are factors. With gain in the general breadth of view it is certain that these methods and this spirit will in the coming years be more fully recognized and will exert their most beneficial influence throughout the whole country.

An Emergency Case

HOW A FOUR-STORY BRICK BUILDING WAS DISCOVERED SLOWLY TIPPING OVER AND THE MEANS EMPLOYED TO RESTORE IT TO SAFE CONDITION

By Owen B. Maginnis

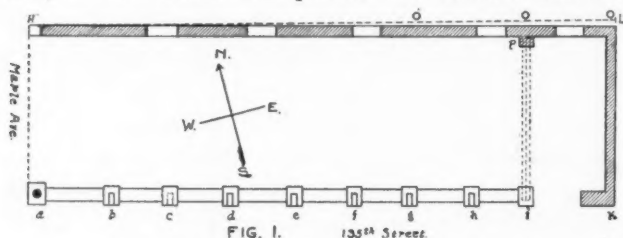
PERHAPS it does not fall into every man's life to have emergencies arise which may mean disaster and probably the loss of life or limb. Yet these sometimes happen in a builder's experience and some are worth recording and describing for the benefit of those who have never met with unusual, serious or dangerous situations.

The momentous occasion which forms the basis of this article happened on a cold, snowy day in the month of January, the thermometer varying from three to ten degrees above zero. The building in question had been topped out, closed in and the scratch coat of plaster applied. Where it was situated is immaterial, and, as the accident has passed into oblivion and had

tlement in some vital part or parts of the building. How to find out what and where was the question. The answer is, or rather would be, by the application of the level and plumb rules.

At a recent civil service examination for a position in the municipal government of the City of New York, appertaining to building construction, this query was put to the candidates, "How would you plumb a building?" The general answer was, "With a plumb rule." Now, while the reply is partly correct, it is inadequate, owing to the fact that the question was intended to cover nearly completed, or existing buildings, regarding their integrity and permanent safety; so that each structure must be plumbed as a whole, with other means besides a short four or five-foot plumb rule, which would only stretch over a distance equal to its length and to cover a building would necessitate the employment of ladders or scaffoldings; a part from the inaccuracy of such a method.

The building referred to being



Ground Floor Plan of Building

no aftermath, it is best to suppress dates, locations and names.

On a certain day the writer's attention was called to the fact that the front street columns of the building—the plan of first story which resembled Fig. 1—as a, b, c, d, e, f, g, h, and i were out of plumb, leaning north. As he was walking east on the northerly sidewalk, being a housesmith and iron setter by profession, his trained eye discerned and noted the discrepancy.

The corner round column had remained and stood practically plumb, but those on the street had moved, showing that there evidently had been an unequal set-

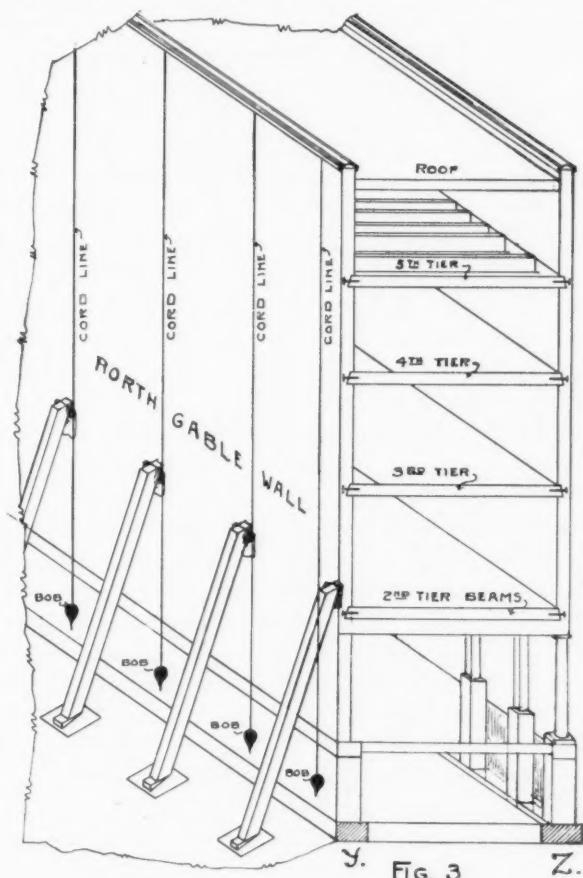


FIG. 2

Building Found Gradually Slipping

about two-thirds completed, would come within the scope of the question; so let us proceed to answer it—as it was practically solved in this dangerous and serious example.

Careful inspection and examination revealed that the square columns were undoubtedly out of plumb, increasing from *b*, Fig. 1, which was $\frac{1}{4}$ -inch out, to *i* which was $2\frac{1}{2}$ -inches, so that the entire building must either have settled, or be moving or settling. To ascertain exactly whether the settlement was past or in progress, the writer proceeded to “plumb” the build-



Walls Pivoted on Y. Z. and Moving North

ing—in its true sense—by the application of numerous cord lines dropped from the top of the wall copings, carried and kept straight with heavy lead and cobble stone “bobs,” as illustrated in Figs. 2 and 3. These excellent expedients, which were placed on the front and rear corners and in the centers of the piers between the window openings, were kept in position for 24 hours. At the end of that time the walls, keen corners and columns at the first story on the level of the second tier of floor beams, were found to be another eighth of an inch out, proving conclusively that the comparatively green walls were moving. This movement was lateral, in a northerly direction, as indicated in Figs. 1 and 3, pivoting from the foundation Y to Z—Fig. 3, taking in the walls of the basement and first story; and, if allowed to continue would eventually cause the whole structure to collapse, injure or kill the workmen and overwhelm the two-story

frame building adjoining, illustrated to the left in Fig. 2. The four upper stories stood plumb and there were no cracks nor bulges visible—simply a gradual movement showing that the equilibrium had somehow been disturbed—some part failed and the whole mass would topple over, having lost its poise.

Something had to be done and done quickly. After consultation it was decided that shoring up the north gable wall at the second tier of beams would check the moving; so the heavy 14 by 14 inch yellow-pine spur braces were set and wedged, after digging down through three feet of snow and working all night with artificial lights.

Some idea of the labor, anxiety and responsibility incurred in doing this may be imagined; but it was safely and well done.

The shoring having made the building temporarily safe, the next duty was to ascertain the cause of its failure, which on examination, inquiry and investigation was found to be due to the settlement of the pier marked P in Fig. 1, through insufficiency of area, lack of bond stones and the laying of the brickwork in frosty weather, causing poor bonding. It was therefore decided to support the upper four stories on timber blockings (see Fig. 5); remove the basement and first story walls and columns, reset and rebuild same all on the existing footings, which remained intact. To do this it was, of course, first requisite to purchase the strip of land H-L, Fig. 1, adjoining the building on the north, as the overhanging wall constituted a trespass. This the owner was glad to do, and the walls, etc., were rebuilt and reset so that the building was made safe and fully fit for occupancy.

It might be put forward, in conclusion, that a very

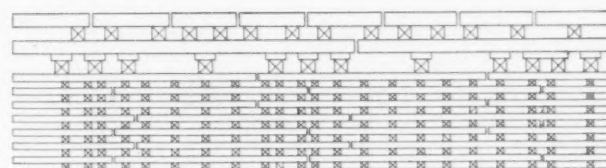


Fig. 5.

Blocking of Timbers to Support Four Upper Stories

simple method of ascertaining whether a building, which has settled or subsided unequally, developing cracks or fractures, is moving, is to gum paper tags, or tack cardboard strips across them, both on the inside and outside of the walls, at stated measured intervals of height and continuously applying levels to the floor.

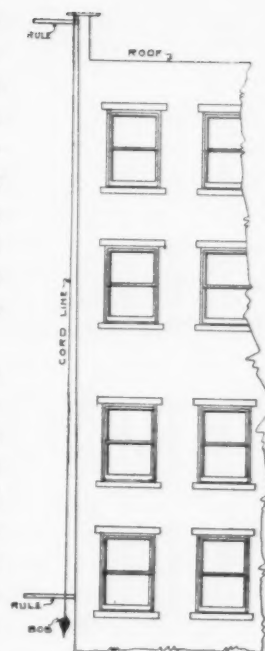
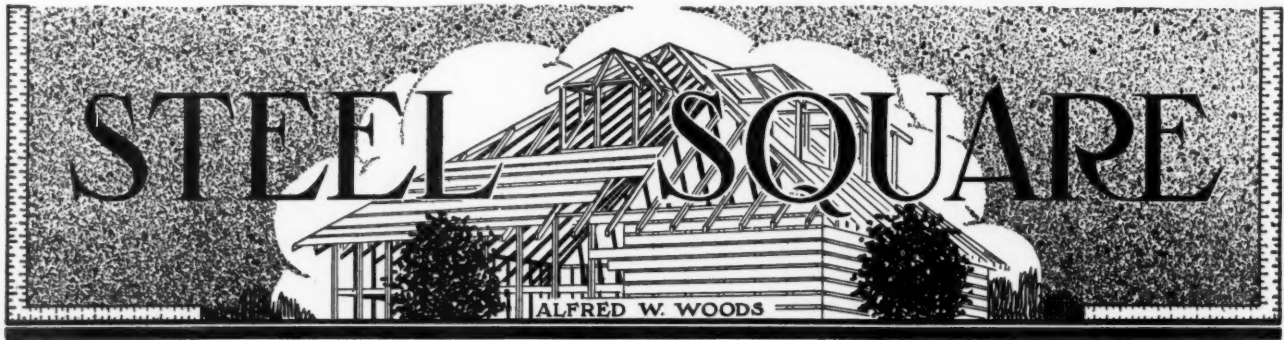


Fig. 4.
Difference between the Figures on the two Rules Shows how much the Wall is out of Plumb.



Practical Uses of the Steel Square

GETTING BACK TO FIRST PRINCIPLES IN STEEL SQUARE WORK—CIRCULAR MEASURE AS THE BASIS
MAKING ALL POINTS PLAIN

THERE are times, and this is one of them, when it is hard for us to talk on the square and keep it up without getting off a little; so we are going to cut it out this time, but talk on the same subject in a roundabout way.

When a young man—that is, when we were younger than we are now—we chanced in at an auction sale. The auctioneer sang and whistled between spurts of oratory in the praise of the article that he had up for sale, claiming it to be the very best ever, that money could buy, etc.; but he no sooner knocked it down to the lucky, or we might say unlucky bidder, than he produced a like article from under the counter, claiming it to be a little better than the one just sold. At first we did not question his honesty, but when he continued to dive down under the counter and bring forth a still better article of the same kind each time, we then set him down to be the most cheerful old liar we ever heard.

But as the frosts of time have gathered about us, we have about concluded that it is not so very hard after all to show a thing up good, then a little better and better and still better until it looks as though it could not be any better. That is just where we are at now, though we have no doubt that some, if not all of the readers, have sized us up about as we did the auctioneer. But be that as it may, last month we put up an exceptionally good article on the use of the steel square; but this month we believe we have an article that discounts the previous one. Then we talked on the square; this month we are talking with the square out of sight. In fact, we are going back of the square and commence at the beginning, "The Circle."

There is nothing new about this, for we are told that calculations were based upon its divisions more than two thousand years ago or about 250 B. C., and we are inclined to believe the discoverers discovered more than they knew, for its scope is far reaching. We pass it up; but we do know that it enters into the most minute calculations which have long since been the adopted standard for circular measurements. By it the angles that enter into all conceivable calculations

are determined, to which the steel square is only a side issue. In other words, it is only a reading instrument to tell what has long since been discovered in the divisions of the circle.

A good comparison is the dial of a Waterbury. The markings on it divide time into hours, minutes and seconds; and the hands are to these markings as the square is to the circle which is divided into quadrants, degrees and seconds. The man back of the square is as the works to the watch. He may need polishing up occasionally, but if he is made of good metal and has the right kind of a balance wheel and a good main spring, which are the main things to make it go, he will get along all right; but if they are lacking, the works are punk though full of jewels. The force is lacking to make it go.

Referring to the illustration, it represents the relation between a square cornered building and the circle. Note that the circle is cut into four equal parts, which means that it is for a square cornered building. The center of the circle is the starting or reckoning point from which the base lines forming the angles radiate. These lines are to the circle as the runs are to the hip and common rafters. See?

In the case of the square corner with equal pitch on both sides, the hip is equally balanced, as though the corner was pivoted at *O*, but the least tilt one way or the other of the framework throws the hip from its mid-point with reference to the plates; the hip is at once shortened and a new center is established on the vertical line, and the sides are no longer equal. Then it represents the unequal pitched roof, but the principles that determine the cuts remain the same as before. In this, we have taken the cornice line for the working line instead of the plate, because in so doing the formula applies to unequal pitches with an even width cornice on each side, yet with the bearing, or seat cut of the rafter resting on the plate. This of course requires the plate on the steeper side to be raised higher than on the other side, a point which we will fully illustrate in our next article.

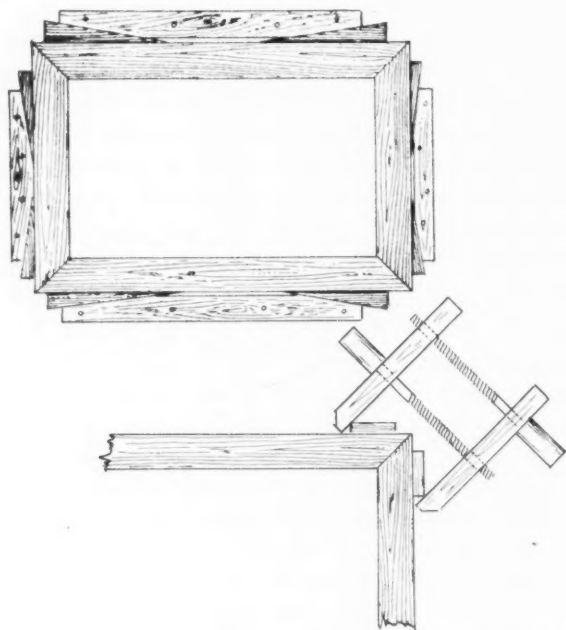
The illustration shows the common rafter and hip

Shop Kinks

SIXTH ARTICLE—A GREAT MANY HELPS, HINTS AND IDEAS ON MILL WORKING, CABINET MAKING AND CARPENTRY WORK FROM THE EXPERIENCE OF A SHOP FOREMAN

By William C. Jasbury

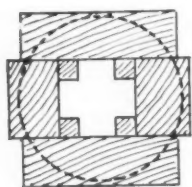
HERE is a good method for mitering together picture frames, door and window trim, and in fact most any mitered joint which is at times hard to clamp up. Some nail strips all around the frame on the bench or floor and drive wedges, as shown in the upper part of the figure; but for a



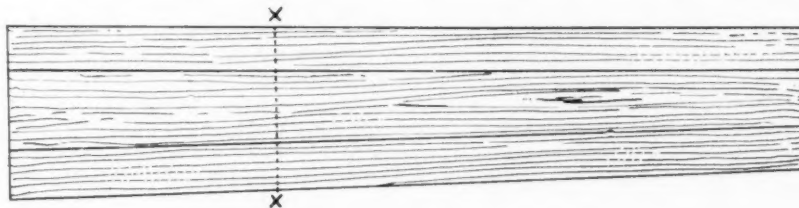
Two Ways to Clamp Mitered Corners for Gluing

first-class job I find it pays to glue small blocks on the ends of the frame pieces on the outside edge near the miter, then use the ordinary hand screw, as shown below. When the glue is set and perfectly dry, chisel off the blocks and clean up the edges. This is an accurate way and sure to make a good joint, though it takes a trifle longer; but there is nothing too good for the Irish. (I'm one myself.)

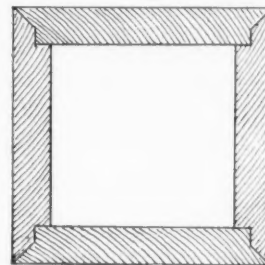
In making boxed up columns to turn for interior work, here is a stunt that is some good when the column is to be tapered. The neck should be some smaller than the base and a taper from one end to the other will not work, because it makes the column too small at the one-third part where the entasis should start; so I shove the two inside



BOTTOM END



How the Parts of a Tapering Column Are Glued Up



Good Corner Joints for Gluing

pieces out at the bottom and in at the top, so that the one-third point comes flush at all four corners. The point at X is where the entasis should start. The glue blocks in the corners are to re-enforce the joint.

Street names. In one part of Philadelphia the streets are named after different kinds of wood; the kids have them all in rhyme, thus:

Chestnut, Walnut, Spruce and Pine; Ash, Maple, Tulip and Vine,— etc.

I have had many stave newels to make where a joint like that shown in the illustration was wanted to conceal the glue surface.

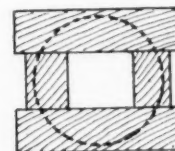
In working ramps, easements, etc., on the variety molder, I have good success, while others say it is impractical. I raise the variety molder head up as far as it will go, then clamp a couple of pieces around the spindle under the head and rest the ramp on them, while working. It takes a steady hand and is a bit dangerous, but all goes in the game. I clamp on pieces for stops, so that when the cutter takes hold it will not jerk it out of my hand and spoil both ramp and hand.

Laying and Scraping of Oak Floors

By W. L. CLAFFEY.

Oak flooring requires great care in laying, as it is very easy to ruin by incompetent workmanship what would otherwise be a perfect floor. Judgment must be used in selecting the different pieces so that they shall blend well and the floor shall present an even shade, and not be dark and light in streaks. This can be done if a little care is used.

If the floor is to be laid over an old floor, remove the quarter-round and sweep the floor clean. Lay the new strips at right angles to those of the old floor. In new houses, the sub-floor is usually laid diagonally. The top flooring is laid across the joists, starting from the longest straight wall, and striking a chalk line from end to end just far enough from the base-board to



TOP END

admit one piece of flooring. Nail the first piece of flooring straight on this line, setting the nails well through the piece. Then start by selecting the light-colored strips and laying aside the darker ones until all of the light pieces have been laid. Then select the lightest of the dark, and so on, until the floor is finished. By doing this, a floor of even color can be obtained. This is the most important part of laying oak floors. When the hearth is reached, miter a hearth-strip or a piece of flooring around same, continuing until the wall is reached, and then nailing the last piece through the face in the same manner as the first piece was nailed.

If more than one room is to be laid, it is much better to select separate shades for the different rooms, laying the light stock in the darkest room. It is best, when laying over old floors or sub-floors, to use a good quality of damp-proof paper or deadening felt under the top flooring.

The flooring should be securely nailed. On $\frac{3}{8}$ and $\frac{1}{2}$ inch, the nails should not be over 6 inches apart; on $\frac{5}{8}$ and $\frac{13}{16}$ inch, not over 8 to 12 inches apart when laid on sub-floors, and 12 to 16 inches when laid on joist. On sub-floors, the nails should be "staggered." Be careful in nailing not to mar the surface of the floor in driving up the nails.

As to floor scraping and finishing, this part of the work should be done with the greatest care, as proper scraping is essential for a perfect finish. Always scrape lengthwise of the wood—not across the grain. No amount of sand papering will remedy the defects in scraping, such as wavy surfaces or the strokes left by the knife. These defects show much more when the floor is finished than when it is being scraped. A floor properly scraped looks very smooth, but still it should be thoroughly gone over with No. 1 $\frac{1}{2}$ sandpaper to obtain the best result in finishing. This should be done carefully by getting on the knees, throwing the weight of the body on the sandpaper, and running it in long, even strokes with the grain of the wood. When the work is done, the floor swept clean, and the dust removed with a soft cloth, the floor is ready for the finish.



Vacuum Cleaner with Utility Motor

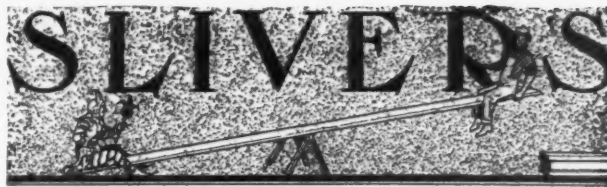
A recent novelty in vacuum cleaners is a machine of this class having a motor that can be used for a variety of purposes. By making minor adjustments, the motor can be adapted to run a sewing machine, a polisher for brass or silver ware, a grinder for cutlery, and so forth. The vacuum cleaner itself can also be used for drying the hair after a shampoo or for currying horses.



Took it for Granted

Mrs. Milligan—Oi hear that Mrs. Quinn is givin' a party on Monday. Her youngest daughter's comin' out.

Mrs. Dugan—An' phwat was she in fer?—*Century*.



Effective Aid

New Official—Why should I give you a job? You worked for my opponent.

Applicant—Sure! That's what queered him!—*Puck*.

In the Mouth

"How do you like the new oatmeal soap?" inquired the barber, wielding the lather brush with extraordinary freedom. "Seems nourishing," the customer replied, with a splutter, "but I've had my breakfast."—*Judge*.

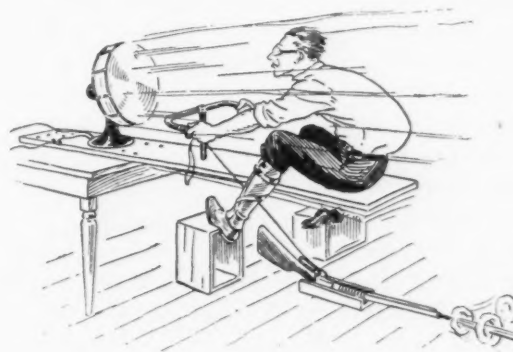
Commenting on the "Fly Campaign"

Take the screen door. It is a great boon, not to say a palladium and bulwark. But it is also a great nuisance. During the day, in our neighborhood, the crashing of screen doors sounds like the rattle of musketry, and the wild wind bangs them all night long. There are inexpensive attachments for preventing this, but sales must be slow.

The slamming screen door is one of the many needless noises that make this world a vale of tears and "a tragedy to those who feel." As we write these few lines, hoping you are the same, screen doors are exploding around us singly and in bunches and it sounds like the Fourth of July.

So many people are blessed with nerves like spaghetti, and it does not occur to them that there are less fortunate people whose nerves are more like strings. But spaghetti has its drawbacks. If it is immune against noise, it is also immune against the finest harmonies.

And the moral of this is, equip your screen doors with shock-absorbers. It may cost ten or fifteen cents, but what, after all, is money for if not to spend?—*Line-o'-Type*.



Practice for the Motorcycle Fiend who "Likes the Noise"
Courtesy The Motorcycle

Designs for Music and Magazine Cases

HOW TO MAKE SOME VERY USEFUL AND ATTRACTIVE PIECES OF SPECIAL FURNITURE—DESIGNS OF GREAT
INGENUITY AND GRACE SHOWN—PROPER CONSTRUCTION

By C. Bryant Schaefer

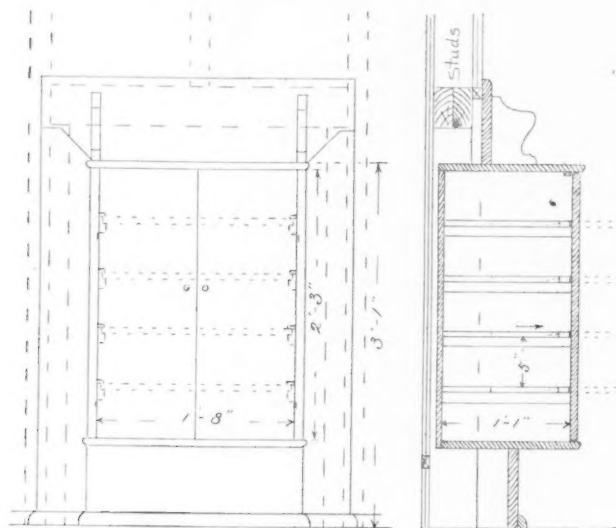
MUSIC shelves have become a necessity in every household. A place is also needed for the large journals that have to lie flat. To keep them in a suitable case will save many moments of searching.

Three designs for music cases are shown. One is for an elegant piece of furniture suitable for the best room. Another is, possibly, more appropriate for the library or the office of a professional teacher. The third design is a simple case built into the wall of the room.

All these cases have desirable and at the same time inexpensive features that make them superior to the articles offered on the market.

The handsomest design is all curves and oval surfaces—standing on tapering legs. It will do justice to the best kinds of wood, preferably the finer grained. It is not difficult to make, however, if one sets about it right.

The usual piece of furniture goes no further than



ELEVATION
SECTION
MUSIC AND PAPER CASE BUILT IN WALL.

the shelves, yet it can be made much more useful with hardly any additional labor or materials. When one looks over music or journals for use it is necessary to have the top free upon which to lay them temporarily. But this is sure to become covered with books and jars. This top is raised up for that purpose, having ample space underneath for sorting over the contents of the case.

A music rack is also often a convenience. One is designed to lift out of the top of the case for standing use. It may also be turned over and lowered in front, when it becomes serviceable for a person sitting down.

With the music shelves directly underneath it, this makes a valuable article of furniture.

This piece of furniture is elegant because it is one solid piece of joinery, expressing the object and use of the different parts in graceful, strengthening lines.

All one has to do in making this article is to fashion a simple box with slightly molded sides, as though made of very wide casing. Then the corners are sawed out flat and glued on diagonally, and finished down to an even surface at the joints with a round chisel. The apron at the bottom and a little swell nosing at the top is put on in the same way.

The hole through the shelves helps in lifting out the music. The curved surface of the doors meets in the middle with a V joint. The raised edge of the top shelf will keep articles from sliding off. Very little carving is needed. The detail drawing shows how the case is operated.

The studio design is more compact. Instead of doors, each shelf has a drop front. The front of the two upper shelves also forms a music rack. The raised shelf at the top is for books. The space underneath enables the top to be used as a counter in looking over the contents.

The two sides are easily cut out on the band saw. Some scroll moulding can be glued on as shown. Inserting the two spindles adds to the appearance. By gluing side pieces onto the feet to make them spread out wider in front the board-like appearance is overcome.

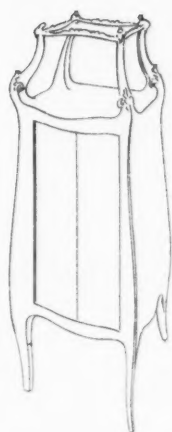
Cabinet Built into Partition

The case built into the stud partition is a plain piece of work of the dimensions shown. There are cheek pieces on top between which to stand a row of books. The shelves are made to slide out with their contents, which is very handy. There should be a finger grip underneath to take hold of. A catch may be made in the back of the shelf to stop it when drawn out 4 or 5 inches or the grooves may be double to prevent the shelf from tilting down in front, which is better.

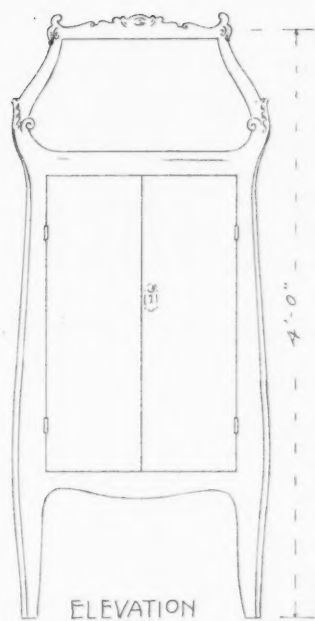
These shelves should be thin, made of three thicknesses glued together. It comes in stock for such purposes.

This closet in the wall is cased up all around as usual with such work. The base board is better when set back a little so that it will not be marred by feet in front. The double doors can be paneled or not. A line of carving near the top would be attractive.

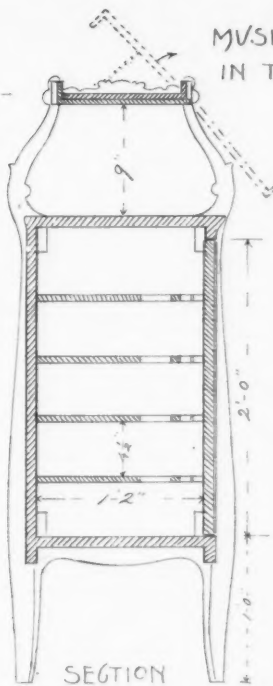
Sheet music and thin journals have an untidy appearance when exposed to view, are often thrown away on that account. A piece of furniture like one of these will consequently save enough material in music and art to pay for itself in a short time.



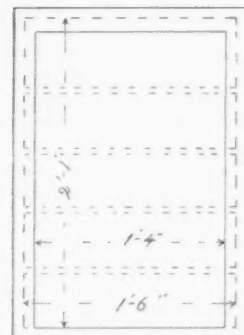
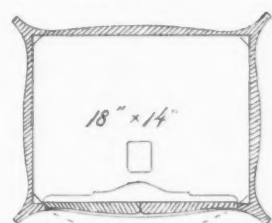
PERSPECTIVE.



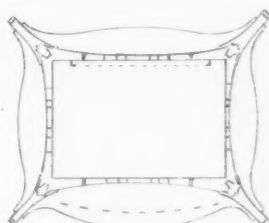
ELEVATION



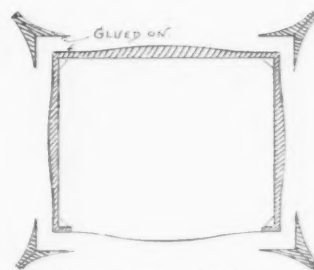
SECTION

ELEVATION
OF BODY

PLAN

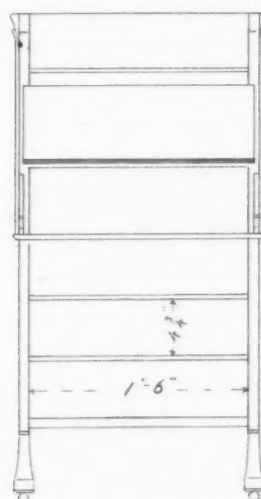
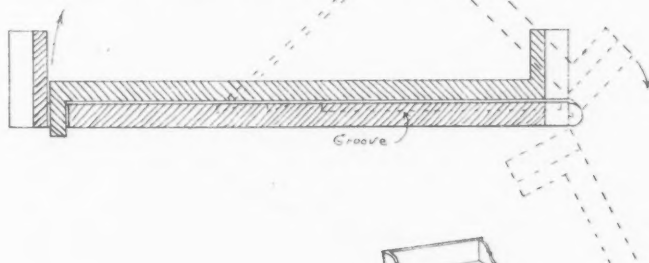


TOP VIEW

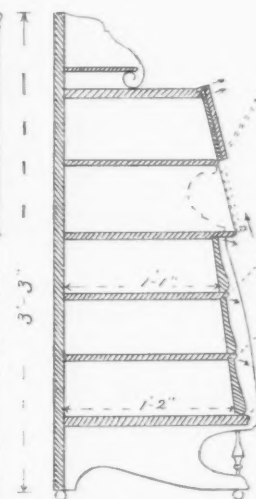


PLAN OF BODY.

DETAIL OF TOP OF STAND
SHOWING FOLDING EASEL.

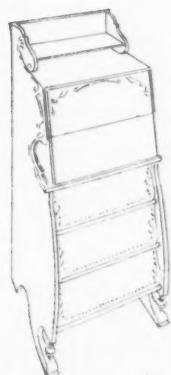


ELEVATION



SECTION.

MUSIC CASES.

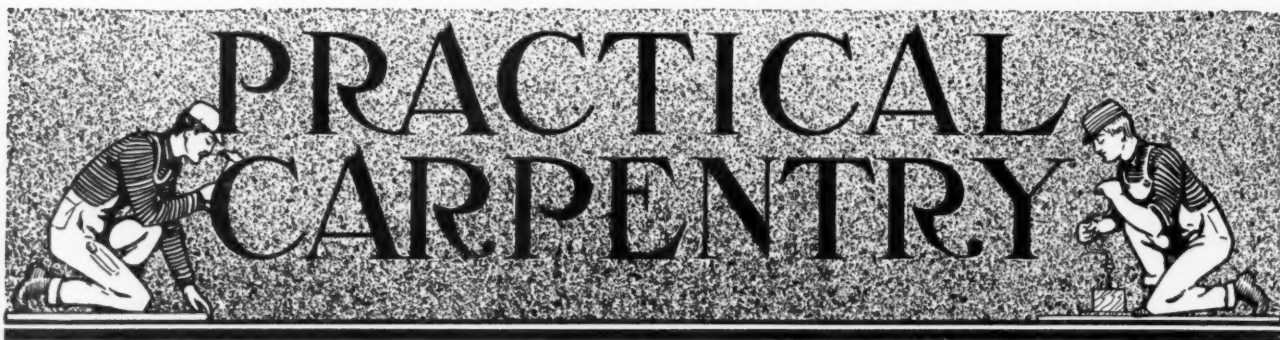


PERSPECTIVE.



TOP VIEW

TWO ATTRACTIVE CABINET DESIGNS WITH DETAILS



Roof Framing by a Simple Method

HOW TO FIND THE LENGTHS OF CUTS OF ALL RAFTERS BY THE USE OF SIMPLE DIAGRAMS AND WITHOUT THE STEEL SQUARE

By George B. Evans

I PRESENT herewith what I consider one of the best and most practical methods of obtaining the lengths and cuts for rafters. The principle underlying the method is perhaps as old as roof framing itself, but doubtless there are some who have never made practical use of this particular method.

The majority of mechanics seem to have the idea that unless one well understands the steel square, at least that part of it that applies to the cutting of rafters and braces, it is impossible to frame a roof with any

degree of accuracy. I believe in the steel square and its wonderful capabilities, still I am inclined to think that a little too much stress is put upon it. It is, however, a tool that will not soon be supplanted by another. Of course, the cutting of rafters whether by the steel square process or any other, is based on the well-known principle that the square of the hypotenuse of a right angle triangle is equal to the sum of the square of the base and the perpendicular. In using the steel square in roof framing, it is taken for

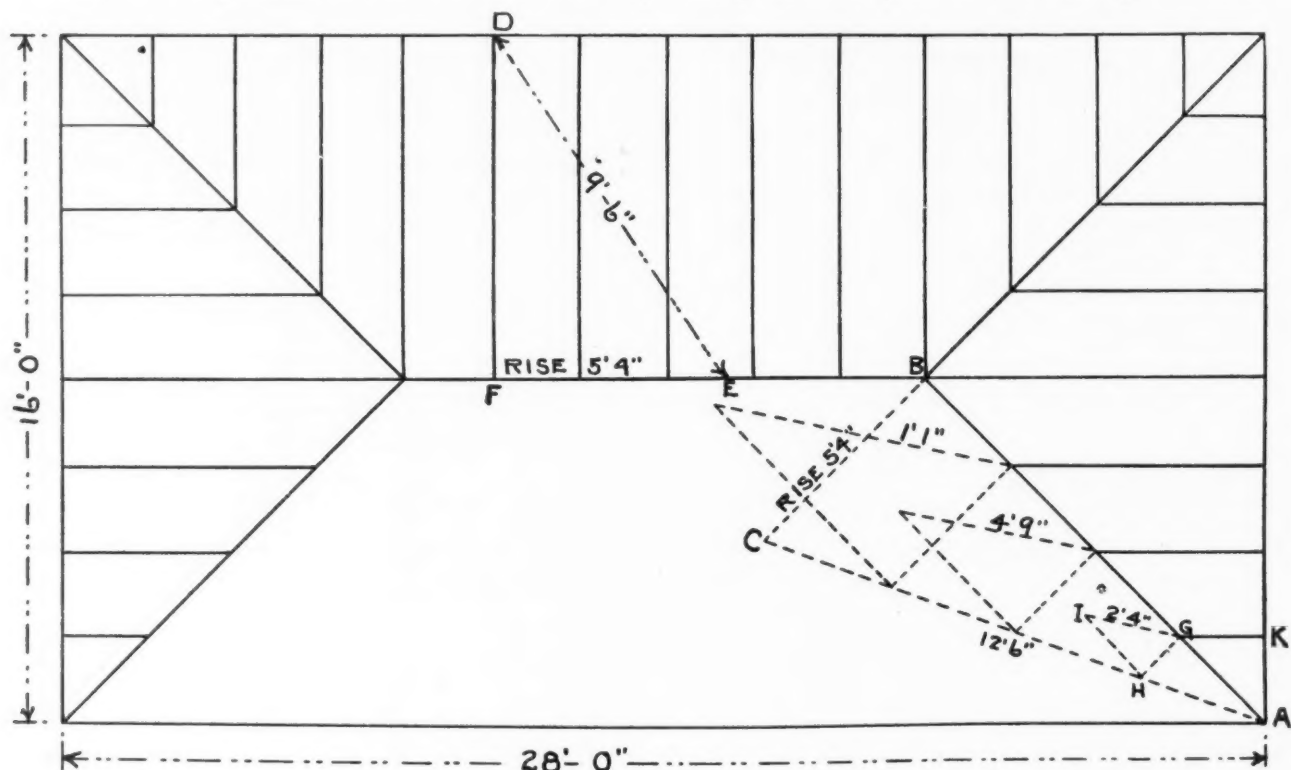


FIG.1.

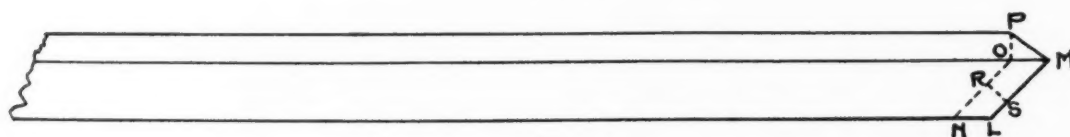


FIG.2.

granted that the diagonal of a 12-inch square is 17 inches, which in reality is $16.97+$ inches. While 17 inches is near enough for all practical purposes, still from the above it is evident that the process of supposition is not geometrically true.

The method that I am presenting is both practically and geometrically correct, if sufficient care is used, it is simple, very quickly done and there is decidedly less chance for making mistakes. The use of the steel square can be entirely dispensed with if desired.

We have in Fig. 1 the plan of a hipped roof 16 by 28 feet, third pitch. First mark out the ridge line, then the hip, common and jack rafters, giving them the proper spacings. These lines, of course, represent the run of the various rafters. Now begin with either one of the hips (A B). At B erect a perpendicular B C, or square up from A B a distance equal to the rise of the roof, in this case 5 feet 4 inches. Join C and A, which gives the true length of the hip rafters (12 feet 6 inches). A bevel set in the angles at C and at A gives the plumb and seat cuts respectively. Next take one of the shortest jack rafters (G K). From the point G, draw a line G H perpendicular to A B and extend it until it touches the line representing the true length of the hip rafter, then draw a line H I perpendicular to G H and make it in length equal to G K, the run of the jack rafter. Join I and G which gives the true length of the first jack rafter (2 feet 4 inches). Treat the second and third jack rafters in exactly the same manner. It requires four pairs (rights and lefts) of each.

Now, on one of the common rafters (D F) measure out on the ridge line from F the distance F E equal to the rise of the roof (5 feet 4 inches). Join E and D which gives the true length of the common rafter (9 feet 6 inches). A bevel set in the angles at E and at D gives the plumb and seat cuts respectively. The plumb and seat cuts of the jack rafters are of course the same as those of the common rafters and a bevel set for the one gives also the cuts for the other; or in other words, the angle at E is equal to the angle at I and the angle at D equals the angle at G.

The side or top bevel of hip and jack rafters is explained in Fig. 2. Apply the bevel set to the plumb cut of the hip rafter and mark the line L M at the end of the hip rafter; then measure square up from L M a distance (R S) equal to the thickness of the rafter. Mark O N through R and parallel to L M. Next mark the line O P square across the top edge of the rafter and join P M; which gives the desired bevel. The side bevel of the jack rafters is found in exactly the same way.

It is to be remembered that half the thickness of the ridge board is to be deducted from the length of the common and hip rafters and half the thickness of the hip rafters to be deducted from the length of the jack rafters.

In actual practice it is better to lay out the work to a scale of $\frac{1}{2}$ inch to the foot, or better still, 1 inch to the foot. It can be readily seen that it will not be necessary to lay out as much of the roof as is shown in the illustration, but I have endeavored to make it so clear that it will be impossible for anyone to misunderstand it. This method will apply to a roof of any pitch.

Amateur Architecture

What might be considered a warning to amateur architects, who have ambitions to erect "palaces" in their own suburbs, is shown in this photograph of a castle-like structure in a California town, which contains "57 varieties" of architecture. The home builder



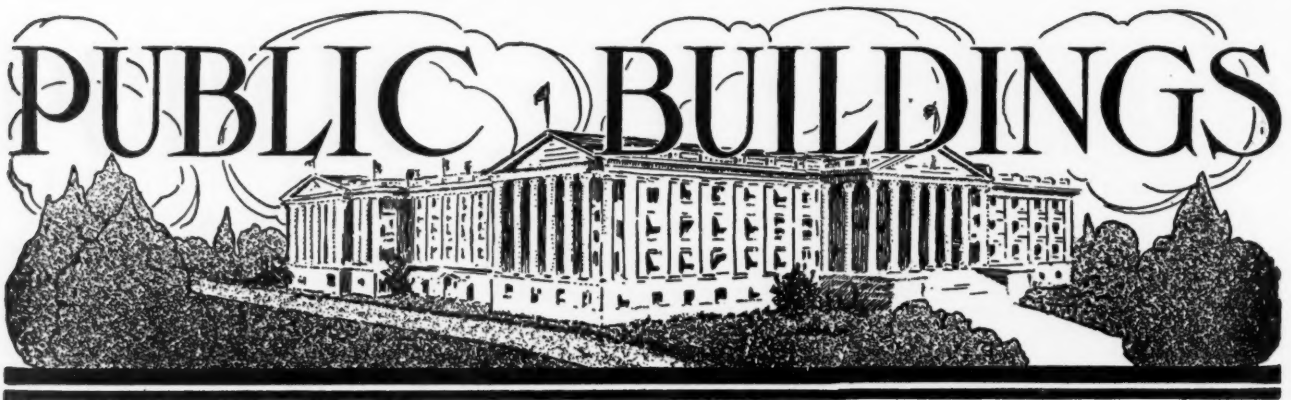
House Design that Has Never Won a Prize.

apparently had a leaning toward the medieval, and machicolated towers in every conceivable point of vantage give it a warlike, not to say theatrical effect.—*Popular Mechanics*.

An Iceless Cooler

The *July Woman's Home Companion* contains a practical housekeeping suggestion for the housekeeper who gets along without ice:

"Obtain a large, common flower-pot and seal the hole in the bottom with plaster of Paris. Place in the pot the bottle containing milk, or a covered crock containing butter, and fill the pot with water to as great a depth as possible without the bottle or crock floating. Cover the pot with a board or a plate and set out in the open air, away from the direct sunlight, and preferably where there is a current of air. The evaporation of the water from the surface of the porous pot will keep the contents several degrees colder than the outside air, when there is the slightest amount of air stirring. The higher the wind, or the drier the air, the greater will be the cooling effect."



An Interesting Modern School Building

PERSPECTIVE AND FLOOR PLANS OF A PUBLIC SCHOOL BUILDING, SHOWING SOME NEW FEATURES FOR PROVIDING FOR THE NEEDS OF THE SCHOOL AND THE COMMUNITY

MANY of our cities are now waking up to the fact that the public school buildings may be put to good use for lectures, entertainments, neighborhood meetings, etc., in addition to their ordinary employment for teaching the young. The grown-ups enjoy the privileges of a fine modern school building quite as much as do the children. The idea is growing that public school buildings may be used regularly for evening meetings without in any way interfering with the work of the school.

Modern public school buildings constructed in a substantial fireproof manner and fully equipped with mod-

ern heating, plumbing, lighting, etc., entail too large an investment of public funds, so it is thought, to stand idle fully two-thirds of the time. The tendency is to-day to make practical use of the public school buildings, especially in the cities, for vacation classes, evening school—where industrial and vocational courses are presented—and for lectures and neighborhood gatherings which all the people can get the benefit of and enjoy. In this way it is proposed to make better use of the public funds needed to put up our modern school buildings.

The accompanying illustrations show a design by

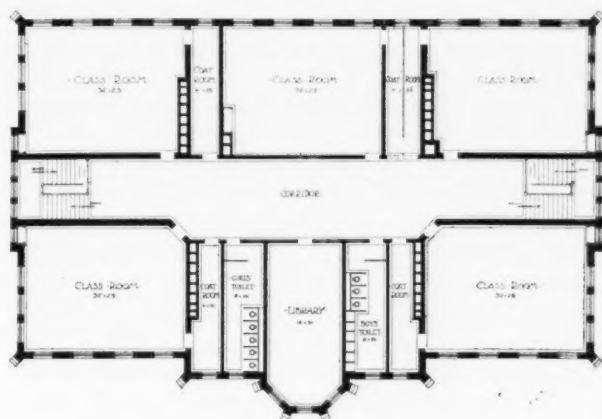


Up-to-Date Public School Building with Facilities for Neighborhood Meetings, Etc.

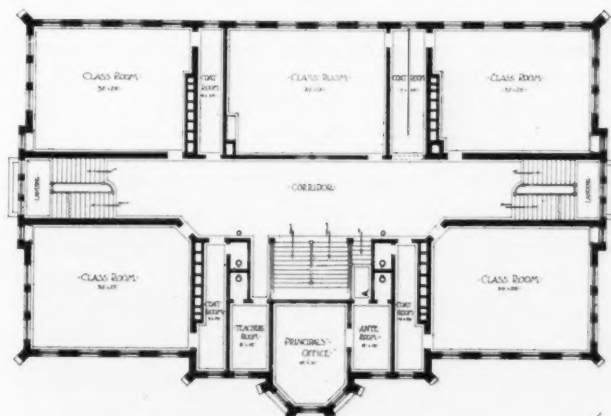
the well-known school architect, G. W. Ashby, of Chicago, prepared especially to meet the needs of such a public school building. It is a brick and stone structure of two stories and a high basement. In this basement there is a very large room provided, easy of access by way of the two side entrances, for neighborhood meetings. This could be used without interfer-

ridors. The principal's office is on the first floor, occupying the strategic position immediately over the front entrance. This room is raised a few steps above the level of the first floor. The library is on the floor above, occupying a corresponding position. The class rooms are all well arranged, in that they open onto the broad, straight halls; and the exit doors are near the stairways so that all rooms can be emptied very quickly and without confusion in case of fire. The stairs themselves are broad and straight as they should be in a building of this kind. Every precaution has been taken in this design to make the building fireproof and panic-proof.

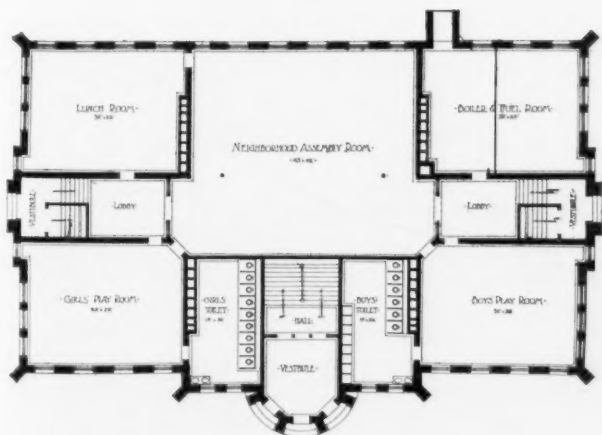
The exterior appearance is exceedingly dignified and attractive. It exemplifies the best modern ideas in schoolhouse designing.



Second Floor Plan



Main Floor Plan



Basement Plan

ing in any way with the ordinary work of the school and could be fitted up in any way desired.

The first and second floor provide ten large, well lighted class rooms, opening off the broad central cor-

Another Church Built in a Day

(Continued from Page 29)

The entire work was under the supervision of local contractors, W. T. Barton and C. J. Hargis, who also drew the plans.

At about 9:30 o'clock the floor of the building had been laid and within five minutes the frame of four walls was up. Within another hour the trussed rafters for the roof were in place, and by noon the weatherboarding of the walls had been nailed on. At 3 o'clock in the afternoon the structure was complete even to the plastering.

A short distance to the northwest of the new church is a vacant lot shaded by pine trees, and under these at the noon hour the throng of workmen gathered around tables and ate one of the best noonday spreads they ever enjoyed. There were several long tables, each loaded with fried chicken, ham, and other meats, vegetables, salads, pies, cakes, and in fact everything that was good and substantial for a lot of hard-working fellows.

The responsibility for this splendid feature of the day's work rested upon the women of the church, assisted by the East Side W. C. T. U. and the Bellview Needle Work Club.

During the entire proceeding of the church building the work went on with a remarkable degree of coordination and smoothness. There was not a hitch, and notwithstanding the number of workmen, there was little or no confusion. Several of the men who had not been used to driving nails mashed their fingers; but there were no audible cuss words.

Short How Many?

Judge—"What's the charge against this man?"

Officer—"Stealing nine bottles of beer, your honor."

Judge—"Discharged, I can't make a case out of nine bottles."



Two Interesting Chairs

HOW TO MAKE THE LARGE ROCKING CHAIR AND ITS COMPANION PIECE, THE SIDE CHAIR, ILLUSTRATED IN THE PHOTO

WE are offering this month working drawings of two chairs of unusual design, suggested by the work of a Chicago architect. The proportioning of the parts, the pleasing space relations are well worthy of study. The construction of the large chair, however, unless the wood is most thoroughly seasoned and the resulting chair kept in even temperatured atmosphere is not to be so highly recommended. The wide paneling when built up and allowed room for swelling or shrinkage is not so objectionable; the trimming of the vertical grained posts with horizontal grained trim is likely to cause trouble unless, as we have said, everything in the way of seasoning and future atmospheric conditions are favorable. Any one looking for new and valuable sugges-

tions will find the photograph of interest.

These chairs might well be made of mahogany. If this wood is too expensive, quarter-sawn oak will work and look well. For the armchair there will be needed the following:

STOCK BILL FOR ARMCHAIR (ALL STOCK S.-4-S.).

Posts, 2 pieces, $1\frac{1}{2}$ by $3\frac{1}{2}$ by 22 inches.
 Posts, 2 pieces, $1\frac{1}{2}$ by $3\frac{1}{2}$ by $28\frac{1}{2}$ inches.
 Rails, front and back, 2 pieces, 1 by $2\frac{3}{4}$ by 29 inches.
 Rails, back, 1 piece, 1 by $1\frac{3}{4}$ by 29 inches.
 Rails, side, 2 pieces, 1 by $3\frac{3}{4}$ by 24 inches.
 Rails, side, 2 pieces, 1 by $1\frac{1}{2}$ by 24 inches.
 Side verticals, 1 by $1\frac{1}{2}$ by 15 inches.
 Side panels, 2 pieces, 1 by $15\frac{1}{2}$ by $14\frac{1}{2}$ inches.
 Arms, 2 pieces, $1\frac{1}{8}$ by 5 by $26\frac{1}{2}$ inches.
 Caps, back, 2 pieces, $1\frac{1}{8}$ by $2\frac{1}{4}$ by 5 inches.

(Stock Bill continued to next page.)



LIVING ROOM WITH FURNITURE ESPECIALLY DESIGNED TO MATCH THE HOUSE
 Complete Directions are Given for Making the Large Arm Chair and the Straight Back Chair

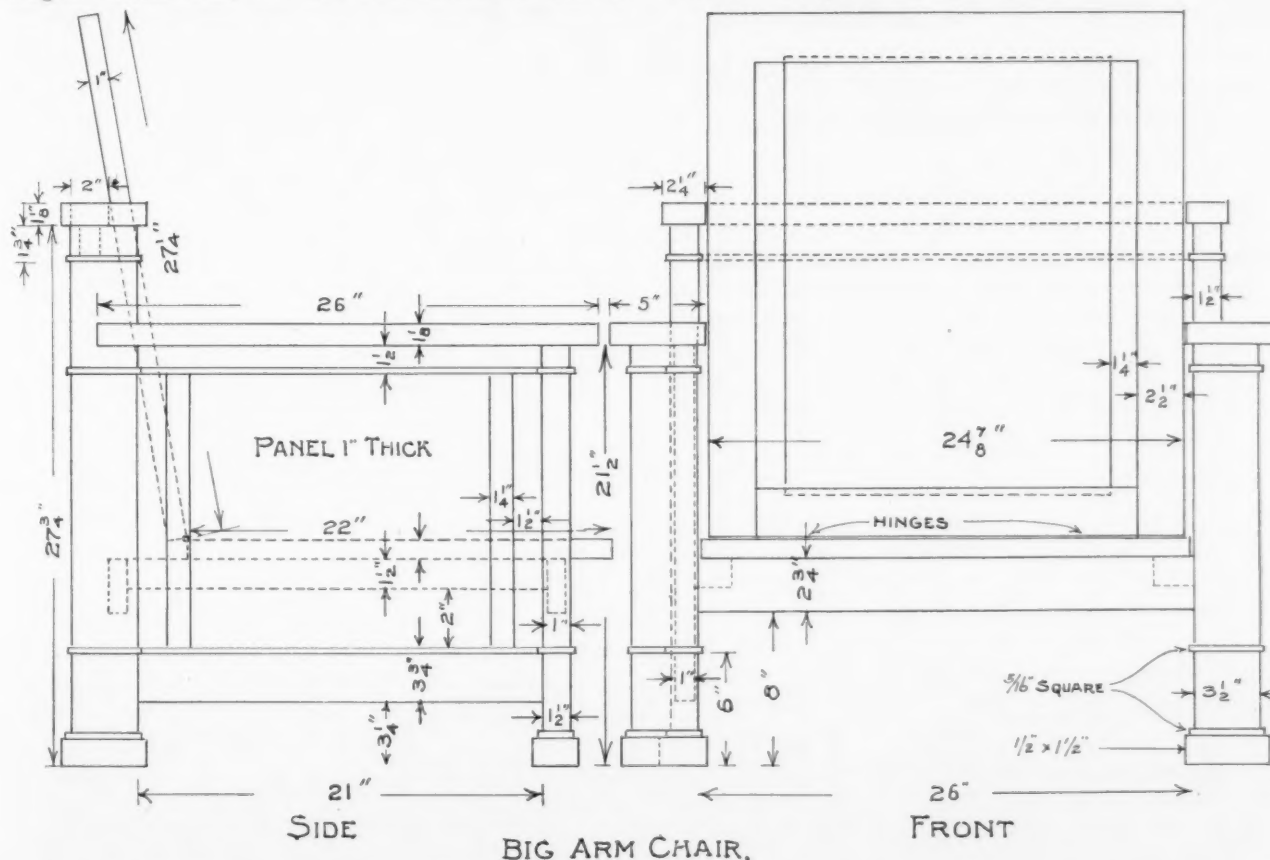
Cap, back, 1 piece, $1\frac{1}{8}$ by 2 by 28 inches.
 Trim, 5 feet, $\frac{1}{2}$ by $1\frac{1}{2}$ inches.
 Trim, 34 feet, 5-16 by 5-16 inch.
 Back stiles, 2 pieces, 1 by $2\frac{1}{2}$ by $27\frac{1}{2}$ inches.
 Back rails, 2 pieces, 1 by $2\frac{1}{2}$ by 22 inches.
 Back panel, 1 piece, $\frac{1}{2}$ by 17 by $22\frac{1}{2}$ inches.
 Seat stiles, 2 pieces, 1 by $2\frac{1}{2}$ by $22\frac{1}{2}$ inches.
 Seat rails, 2 pieces, 1 by $2\frac{1}{2}$ by 22 inches.
 Seat panel, 1 piece, $\frac{5}{8}$ by 21 by $22\frac{1}{2}$ inches.
 Seat supports, 2 pieces, $1\frac{1}{2}$ by 2 by 24 inches.

Begin work by squaring the four posts to proper length. After this, the side rails should be cut to

The back is framed and paneled with a panel open at the two sides. Seat and back are hinged together as the working drawing specifies. Sliding forward, the seat inclines the back proportionately. It is intended that well filled heavy cushions be used on both seat and back.

How to Make the Side Chair

If the side chair is to be used in the same room with the armchair, it may well be made of the same material and given the same finish.



length and tenoned and the grooves that are to hold the panels placed therein. Mortises, too, will need to be made to hold the ends of the verticals.

Lay off and work the front and back rails as indicated in the working drawing. Now stand the posts in the positions they are to have relative to one another and mark, as with penciled circle, the approximate locations of the mortises. Lay the posts on the bench in pairs and score the locations of the ends of the mortises after making accurate measurement. Cut the mortises and put the sides of the chair together.

When the glue has hardened, take the sides of the chair from the clamps and put in the front and back rails and the seat supports.

While the glue is hardening, the seat and back are to be made. The seat is of one solid panel set in a frame with enough depth of groove to allow for shrinkage and swelling. No glue will want to be allowed in the groove or the panel will come to disaster.

STOCK BILL FOR SIDE CHAIR

Front posts, 2 pieces, $1\frac{1}{4}$ by $1\frac{1}{2}$ by $17\frac{1}{2}$ inches. (Without modeled foot.)
 Back posts, 2 pieces, $1\frac{1}{4}$ by $1\frac{1}{2}$ by $42\frac{1}{2}$ inches.
 Seat rails, 1 piece, 1 by $2\frac{1}{2}$ by 18 inches.
 Seat rails, 1 piece, 1 by $2\frac{1}{2}$ by 17 inches.
 Seat rails, 2 pieces, 1 by $2\frac{1}{2}$ by 17 inches.
 Side rails, 2 pieces, $\frac{3}{4}$ by $1\frac{1}{4}$ by 15 inches.
 Stretchers, 1 piece, $\frac{3}{4}$ by $1\frac{1}{4}$ by $16\frac{1}{2}$ inches.
 Back, 1 piece, $\frac{3}{4}$ by $3\frac{1}{2}$ by 15 inches.
 Back, 1 piece, $\frac{3}{4}$ by $1\frac{1}{4}$ by 15 inches.
 Back, 2 pieces, $\frac{5}{8}$ by $\frac{5}{8}$ by 35 inches.
 Back, 2 pieces, $\frac{5}{8}$ by $\frac{5}{8}$ by 10 inches.
 Back, 9 pieces, $\frac{1}{2}$ by $\frac{1}{2}$ by 30 inches.
 Trim, 5 feet, 5-16 by 5-16 inch.

All stock is to be sized on four sides to the widths and thicknesses specified. There will be needed also some rough stock for the seat bottom and some corner blocks for glueing and bracing the seat frame. These latter can be got from scrap stuff.

In making this chair the front posts are to receive attention first. Square up the ends. If the feet are to be modeled as indicated in the working drawing,

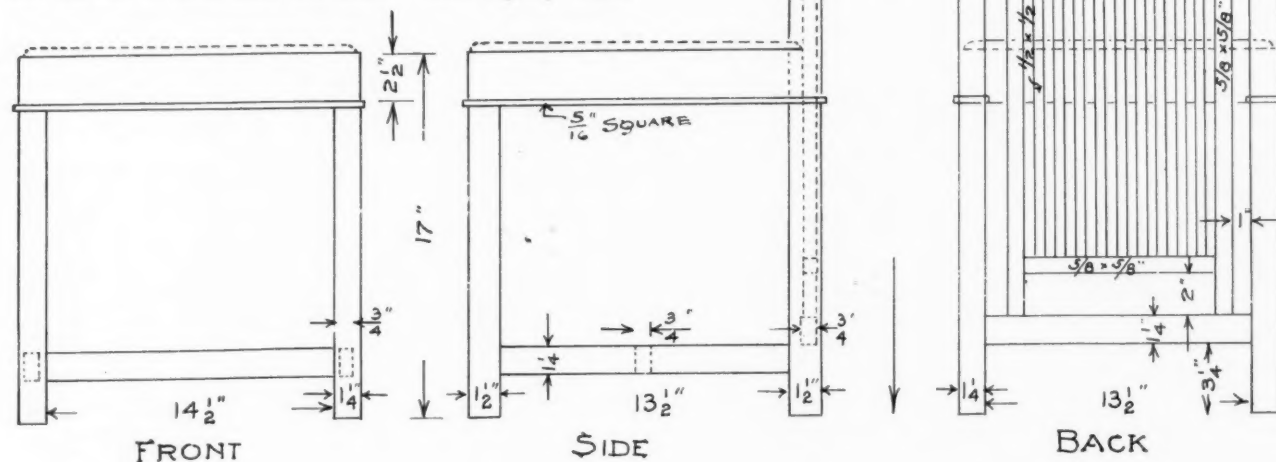
the front will need to be worked accordingly. In this case the stock bill should be changed so as to make allowance for the extra stock needed. A second way of getting the same effect is to square the posts as the stock bill calls and then glue on to the front of the posts, at the foot, enough extra stock to allow the modeling. Shape the back posts by giving them the slant indicated.

Prepare the rails and the seat frame. Lay out the mortises in the posts and cut them. Put the back together, using good hot glue. Build the seat frame, then put together the rest of the chair, attaching it to the back.

The manner of placing the trim on this as well as the armchair is made evident by the working drawing and illustration.

Methods of Finishing

Both chairs may be finished alike, a good finish being obtained as follows: If mahogany, apply a coating of mahogany stain. Allow this to dry, then sand it lightly with fine paper. Apply a thin coat of shellac and when it has hardened, sand lightly. On the shellac place a coat of paste filler colored to match but darker in tone than the stain. Sand lightly when



SIDE CHAIR.

hard, and apply a coat of orange shellac. On this shellac apply several coats of some good rubbing varnish. Rub these latter coats with pulverized pumice stone and raw or crude linseed oil for the final coat, and curled hair for the preceding coats.

If the wood is white oak, the same kind of treatment can be given but with a stain and filler more suited to oak, such as Mission, Flemish, golden, etc. Still another way to finish, if of oak, and one that is more easily applied, is to give the wood a coating of Mission stain, and upon this apply one of the dead finishes or fixatives. If an oil stain is used, a thin coat of shellac is suitable. This latter finish leaves the pores of the wood open. To some finishers this is objectionable. Others seem to prefer this kind of surface. There is no reason for one's not having his taste suited in this day of such great variety in wood finishes.

Lehigh Valley Railroad Dates Its Cross Ties

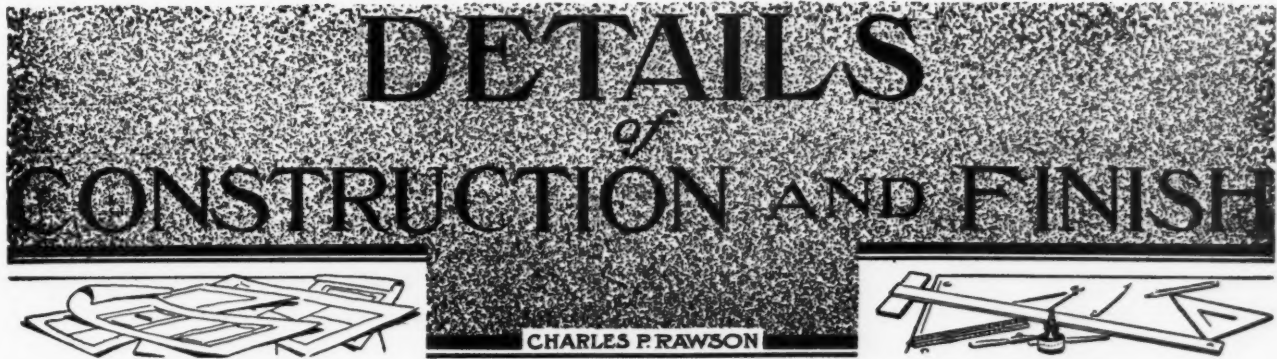
The Lehigh Valley Railroad has adopted a plan by which it will be able to determine, with mathematical accuracy, the relative efficiency of the different woods of which its new cross ties are composed, and the value of the creosote preservation treatment. In each new tie put down will be driven a nail, on the head

of which will be stamped a numeral indicating the year. The numeral "11," for example, will indicate that the tie was laid in 1911. In the future when a tie has to be replaced, the date stamp will show just how long it lasted.



Lost

Bridget O'Flarity had a recommendation written for her before leaving Ireland to come to America. When coming across, while leaning over the railing of the steamer, she dropped the letter into the ocean. On her arrival in New York she didn't know how to proceed to find work without her recommendation, so she appealed to Pat Rafferty, a fellow passenger, and he wrote the following letter for her: "To the general public—Bridget O'Flarity had a good reputation in Ireland, but lost it on the way over."



Ice-Houses

COMPLETE DETAILS OF CONSTRUCTION FOR A MODEL ICE HOUSE AND FOR A SMALL, CHEAP ICE HOUSE FOR THE FARM—VALUABLE POINTERS

THE common use of ice is comparatively recent and the modern ice house is of recent development. The first ice-houses were built below the ground, but at the present time all are constructed above the ground, as it has been found by experience that the protection afforded by the earth is of comparatively little value. It was long supposed that the walls of an ice-house should have dead air spaces, but it has been found that it would be far better if these spaces are filled with mill shavings, sawdust or other good filling material.

Care should be taken in filling an ice-house to so pile the ice that in melting it will not press against the sides of the building. This is easily accomplished by pitching the floor towards the center. In cutting the ice it is advisable to make the cakes as regular in shape as possible, oblong rather than square. In this way alternate tiers can be reversed so that joints will be broken as shown in the section.

A Model Ice-House

In the northern latitudes where natural ice may be stored cheaply at a cost ranging from fifteen to fifty cents per ton, it is not good practice to invest too much money in an ice-house for its protection. It is more economical to build the ice-house a little larger to allow for additional meltage. The model ice-house shown by the accompanying plans and details is planned to be insulated with fine mill shavings in the floor, sides and ceiling, and the ice need not be covered or packed in any way. This of course is a very decided advantage over the older methods of storing ice, since when the ice is clear of hay, sawdust, etc., the labor of removing it from the house is reduced probably one-half. The cost of construction too, is not greatly in excess of the old method of ice-house construction.

It will be seen by referring to the plans that the outside measurement of the building is 18 by 28 inches and that the height of the studs is 20 inches. This shape of building gives a minimum amount of exposure for the amount of ice contained. It is in-

tended that the ice fill the house clear to the ceiling, and that this may be readily accomplished the take-in door is extended clear to the top. The roof is provided with ventilators, one in each gable. One gable at least, is hinged like a door in order that the attic space may be readily entered. These vents prevent, to a large extent the penetration of heat into the ice chamber from the roof, by allowing a circulation of air through the attic space.

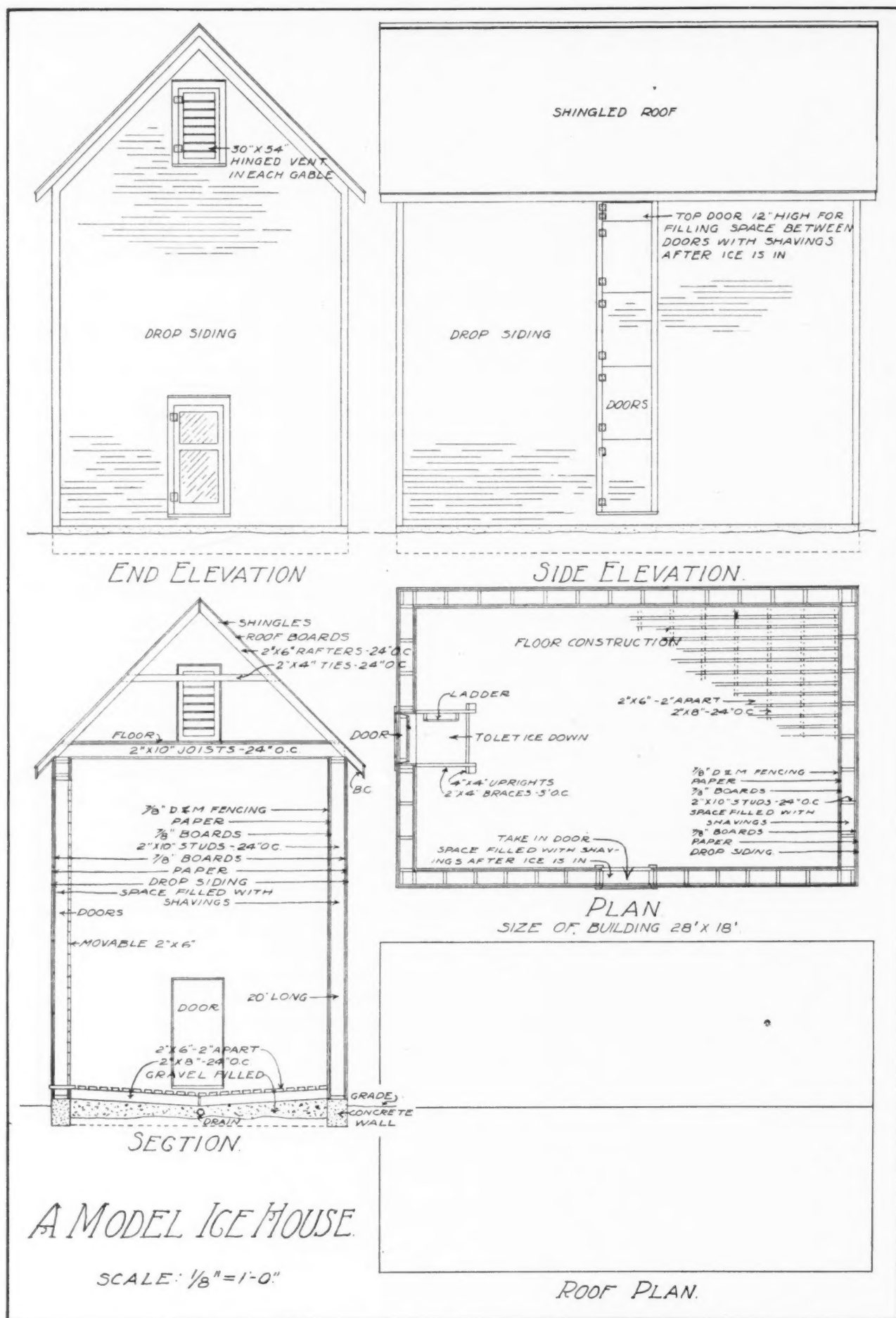
As the house is filled with ice the take-in doors should be closed successively and the space between the same and the movable planks filled with mill shavings. Inside the door for removing the ice is built a framework which leaves a space to be used for lowering ice. This space is provided with a ladder. There should be no opening from the ice chamber to the attic as, contrary to the popular idea, no ventilation over the ice is necessary, unless the ice itself is covered with hay or sawdust.

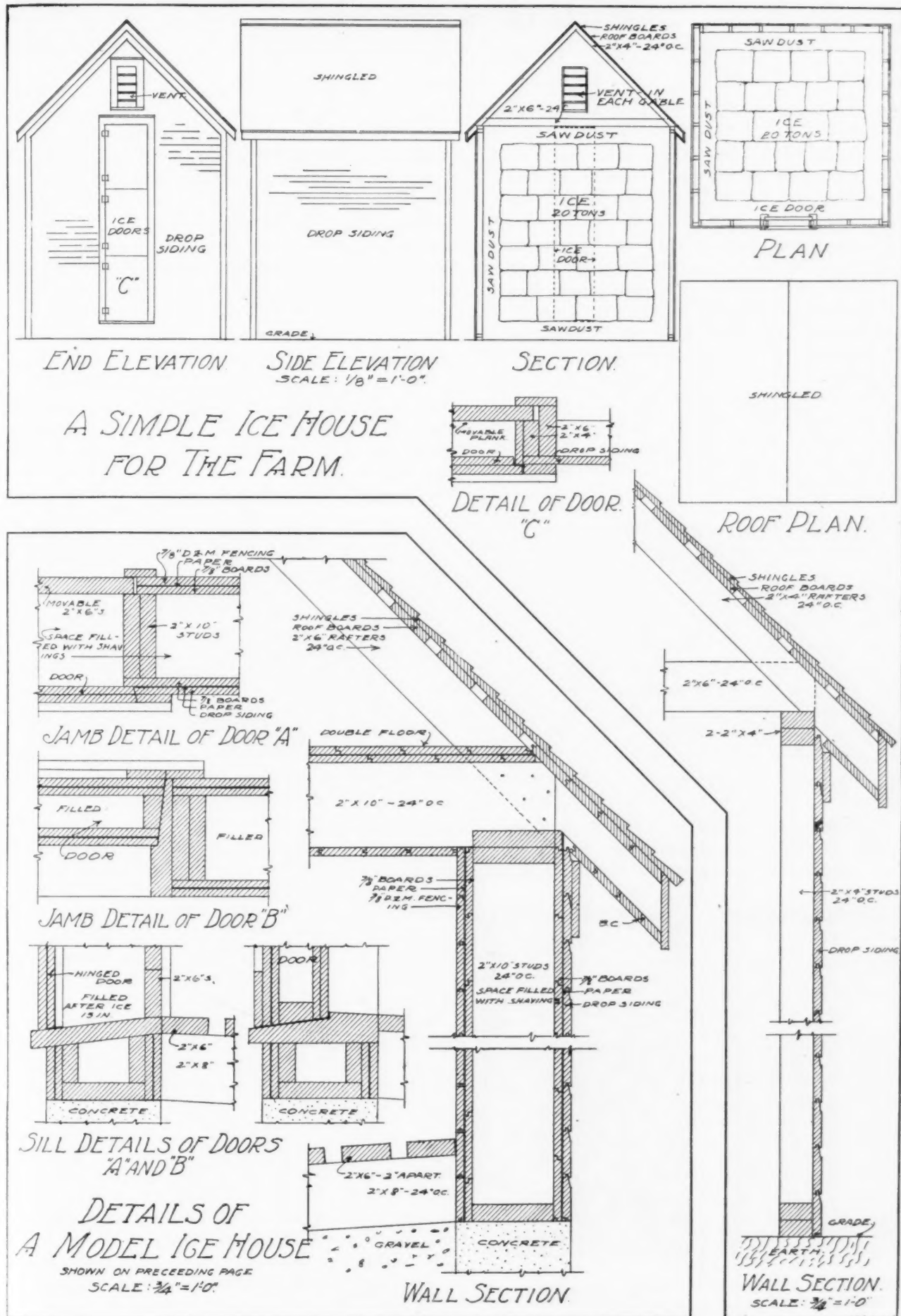
A deep foundation is not necessary as the entire weight of the ice rests directly on the ground, as the floor is not in any way connected with the building. The space between the foundation should be filled with gravel, and, if the soil beneath is of clay it is well to lay a porous tile drain through the building connected with some drainage point. This drain may be dispensed with if the soil is sandy.

As will be seen by referring to the plans and details, the floor is formed by placing 2 by 6 inch planks 2 inches apart on top of 2 by 8 inch joist spaced 24 inches on centers; these are laid directly upon the gravel filling, and the space between them should be thoroughly filled with mill shavings. The walls and ceiling are constructed by 2 by 10 inch stuff spaced 24 inches on centers and double-boarded inside and out with water proofed insulating paper between. All spaces are to be filled thoroughly with mill shavings. The roof is of ordinary construction of 2 by 6 inch rafters, roof boards and shingles. The plans, elevations and sections are drawn to the scale of one-eighth

(Continued to Page 52)

FULL PAGE PLATES SHOWING COMPLETE DETAILS ARE PRESENTED ON THE TWO PAGES FOLLOWING





Fitting a Drawer

A LITTLE POINT IN CARPENTRY WORK THAT IS OFTEN TROUBLESOME, THE LOOSELY FITTED DRAWER THAT STICKS—CAUSE AND REMEDY

By W. D. Graves

A DRAWER that is loosely fitted is not well fitted, nor will it work at all nicely if it is narrower at the back than at the front; but the sides should always be parallel and fitted closely between the guides. If it is longer from front to back than across the front, especially if it has a single knob in the center of the front, it may work smoothly enough even though tapered a little; but if it is longer across the front, like the usual bureau drawer, then satisfactory working can only be attained by very careful fitting. A good test, after one has fitted

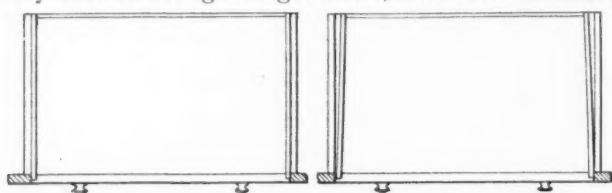


Fig. 1.

Fig. 2.

a drawer so that he can work it nicely himself, is to get some one else to try it—some testy and ill-tempered person is best for the purpose.

A drawer so fitted that the sides are square with the front and parallel with each other, snugly filling the space between the guides, as shown in plan view in Fig. 1, will slide smoothly and readily even when the pull is mostly on one knob. One fitted as shown—exaggerated—in Fig. 2 may not arouse the ire of the testy tester if he happens to pull exactly alike on both knobs; but if he happens to pull a bit harder on one than on the other, as he is very apt to do, the outcome is sure to be disagreeable. The result will be practically the same, even though the sides are parallel, if they are appreciably loose between the guides.

There are many holding devices which work upon exactly the same principle as that of a loose fitting

drawer, and they hold very securely indeed. How they work is illustrated by the accompanying photographs of a rough model, wherein a rectangular piece of wood is made to slide between two guides as a drawer does. In each of the blocks representing the drawer a screw-eye is placed, in about the same relative position that one of the knobs of a bureau drawer would be. The closely fitted one will slide freely by taking hold of this screw-eye; but the loosely fitted one refuses to slide even when considerable weight is suspended from it as shown. Indeed, this weight may be increased till something breaks before the "drawer" will start.

It is true that one is little apt to try to open a drawer by pulling on one knob only; but there is even less likelihood of the pull exactly corresponding to the weight on each side.



Ice-Houses

(Continued from Page 49)

inch equals one foot, and the details to the scale of three-fourths inch equals one foot.

Ice houses similar to the one shown herewith can be built under ordinary conditions for from \$300.00 to \$400.00.

A Simple Ice-House for the Farm

The drawings show an ice-house which is cheap to construct and thoroughly practical. The building is 12 by 12 by 12. About twenty tons of ice can be stored in it after allowing for the sawdust filling at the bottom, sides and top. If the house is to be located on sand or gravel soil, it may be built on top of the ground and need not be provided with drainage. The walls are constructed of 2 by 4 inch studs, 24 inches on centers and covered on the outside with drop siding. The roof is of ordinary construction and there is no inside boarding. Each gable contains a slat ventilator. The actual cost of constructing this ice-house should not exceed \$50.00 and the advantages of a supply of ice on the farm which will last through the summer are very apparent to those who are provided with ice houses. The plans, elevations and sections are drawn to the scale of one-eighth inch equals one foot and the details to the scale of three-fourths inch equals one foot.



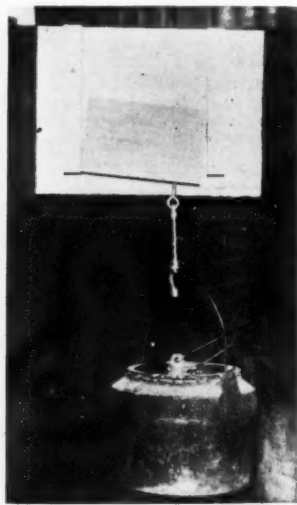
Give and Take

"What're ye comin' home with your milk pail empty for?" demanded the farmer. "Didn't the old cow give anything?"

"Yes," replied his boy; "nine quarts and one kick."
—The Sacred Heart Review.



Closely Fitted "Drawer"
Supported by the Hand



Loosely Fitting "Drawer"
as a Holding Device

TWO SIMPLE EXPERIMENTS

Prepared Roofings

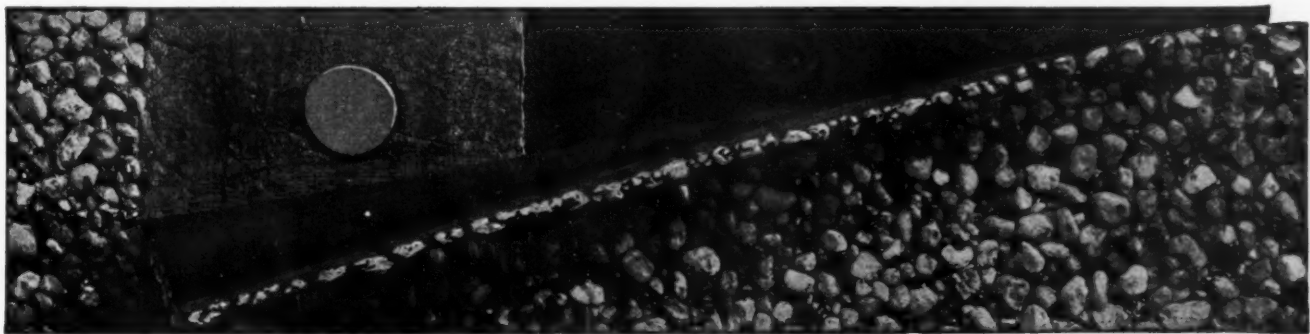
WHAT PREPARED OR READY ROOFINGS ARE—HOW MADE—PRESENT UTILITY AND VOGUE—WATER-TIGHT JOINTS FOR HEAVY MINERAL SURFACED ROOFINGS

SINCE the wholesale destruction of our forests and the general rise in the cost of shingles and other building materials, a demand for some other roofing material as a substitute has been created throughout the country. To meet this demand, materials of all classes—sheet metal, clay products, slate, cement and finest grade of refined asphalt—have been used to manufacture an article for this purpose. Unfortunately, there has been much deception in this trade, for there has hardly been a roofing whose merit has won it a position in the market, but it has been followed by a cheap article with a cheap price, which from its looks could hardly be detected from its better made competitor.

There is one thing clear, however, which is, that the prepared or "ready" roofings have come to stay; that they are filling a position in our markets where there has been a lack; and today they hold one of the foremost places in the general building trade

tic products used for this work. The manufacture of the felt is itself a most important consideration, as it requires skill and care to combine the necessary high absorptive power with sufficient tensile strength. Smooth surfaced roofing is supposed to be coated every few years and the coating for this purpose is sold by the manufacturer.

The surfaced roofings are made mostly from high-grade asphalts, applied on top of a foundation of alternate layers of felt and asphalt, the felts being lighter than those used in the smooth surfaced roofings. The upper layer of this asphalt is thicker and is heavily coated with gravel, mica, slate or some other mineral rock. These roofings differ from the smooth surfaced in that the latter depend largely upon the saturated felt, both for strength and durability, while in the rock-surfaced roofings this is not the case, the chief function of the felts being to support a greater amount of weather proofing material. There must be



Wide Welded Joint for Heavy Mineral Surfaced Roofing. The Two Uncoated Surfaces are Cemented Together With Hot Asphalt, Covering the Nailing Edge and Forming a Water-tight Joint

among high-grade roofing materials. Further, a man who really wants a good roofing can get it by asking for it, provided he does not merely buy on a price basis but purchases those grades made by the standard concerns throughout the country.

Prepared roofing might be classified under two heads: 1, smooth surfaced roofings; 2, gravel, feldspar, slate chips, or other mineral surfaced roofings.

The smooth surfaced roofings have one layer of felt, which is usually saturated with an asphaltic liquid. This felt is surfaced on both sides with a thin coat of asphaltic material and finished with soapstone or something of similar character. In making the better grades of roofing they simply increase the thickness of this saturated felt, using similar asphaltic coatings and finishing materials. The terms "one-ply," "two-ply," etc. used to distinguish different grades, thus refer to the thickness of the felt and not to separate layers of material. In all reliable brands good quality felt is required in the manufacture, good material used in saturation, and great pains taken that the felts are thoroughly saturated and literally filled with the asphalt-

enough felts in the foundation to carry this extra material and furnish strength enough for easy handling in the trade and in application.

The roof is based on the theory that the asphalt and mineral surfacing used in its construction is in itself, when properly applied, indestructible, while the felt is more perishable—as is proved by the fact that it is of little use in a roof until thoroughly saturated with the asphalt mixture. Thus, in making roofing for high-grade buildings, where permanent durability is necessary, the mineral surfacing and asphalt are increased in quantity rather than the burlap or felt. These roofs have to be recoated at but rare intervals when manufactured from a good grade of asphalt.

Although the smooth surfaced roofings and the gravel or mineral surfaced roofings are often sold and recommended in competition with each other for similar purposes; and though both, when properly made, are good roofs, they really belong in two different classes of trade. The smooth surfaced goods—which are much lighter in weight than their gravel and mineral surfaced competitors, are used for the lighter con-

struction work. They find a ready sale among merchants and dealers throughout the country and, because of their lightness in handling and comparative cheapness in price, appeal to the general trade. Smooth surfaced roofing has one great drawback, however, that for some reason—possibly because its use has spread so rapidly—there are more cheap imitations of it than of any other roofing material in the country, and its purchase should be based on careful investigation.

The gravel and mineral surfaced roofings are sold largely in the general trade, but more particularly where permanent roofs are wanted. They make a fine appearance on residences and all classes of buildings when properly applied, and the fact that they are heavier than the smooth surfaced goods appeals to the higher class trade; but the difference in weight interferes with some grades of mercantile business because it makes an extra bother in handling. As a result, this business drifts towards large permanent



Mineral Surfaced Ready Roofing Used as Siding on the Upper Story and in the Panels of the Bay Windows—New Detroit Apartment Building

work, such as fine business blocks, large buildings for factory and railway use, a large class of farm buildings, etc. An intermediate roofing is made by most of the manufacturers of the gravel and mineral surfaced roofings for the cheaper and lighter trade by using sand instead of gravel surfacing and a lighter top coat of the asphalt covering.

In prepared roofings quality as well as looks must be considered. Without exception, the manufacturers of high-grade roofings have recognized this fact and standard grades of refined asphalt are used in the manufacture of the roofing in combination with best grades of long-fiber, wool felts of high absorptive power, insuring thorough and complete saturation.

The first question an architect or practical builder considers in connection with a prepared roofing is the joint. This point needs attention. Some recommend using for the joints the hard cement of which the roofing is made, instead of the liquid cement. This hard cement is not quite so easy to apply, as it must be raised to the proper temperature; but it is more likely to ensure a tight roof. Some makers also lap the

sheets from three to six inches instead of the regular two inches. A still greater improvement appears when a close weld with hot asphalt is made with the upper sheet to the two-inch lap of the lower surface of the under one, from which the mineral surfacing has been removed, leaving a surface heavily coated with asphalt.

The six-inch welded joint illustrated herewith, made by one of the leading manufacturers, merits special mention, for it not only has the principle of the joint produced by removing the mineral surfacing, leaving the heavily coated asphalt surface ready for the hot weld; but, in addition, has a four-inch extension of single felt beyond the ungraveled, marginal edge, which, when coated with hot asphalt of right temperature, gives an additional weld of a layer of felt as permanent as any other of the layers of felt used in the composition of the roofing. This joint is so perfected that it is not necessary to drive a nail through from the top of the roofing, all the nails necessary to be used being driven through the lower sheet into the roof and covered with the upper layer, which is then welded to the lower sheet.

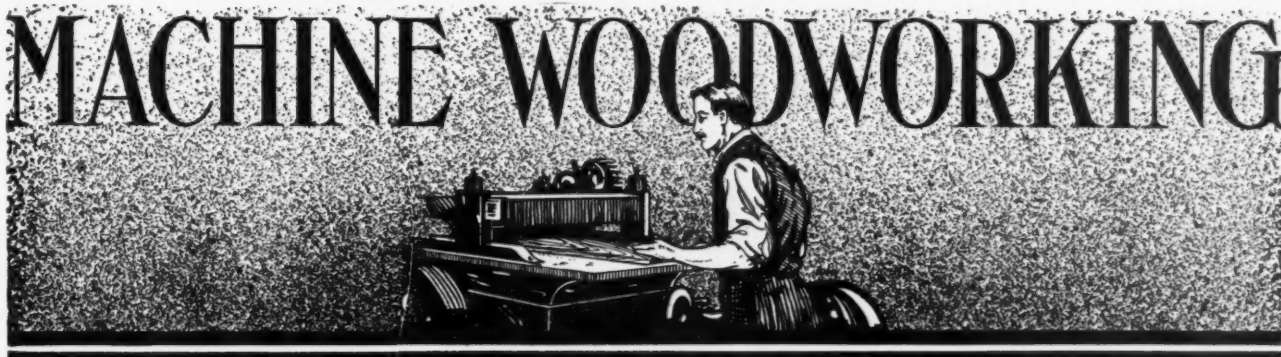
The growth of the prepared roofing business in the United States during the last few years has been marvelous. Twenty-five years ago shingles, galvanized iron, tin, and slate represented all the grades of roofing sold, except a cheap felt for temporary work. Today, in practically every city and village in the United States, from one to a dozen different brands of high-grade roofing material are sold by the dealers. In Canada, nearly every town has dealers handling roofing made by American manufacturers, while in Buenos Ayres, S. A., at the recent exposition, the highest prizes were awarded to three grades of prepared roofing manufactured in the United States, and a fourth received honorable mention.

Painters' Union to Launch a School for Apprentices

Chicago, June 20.—Apprentice and journeymen painters of Chicago will soon have an opportunity to study both the theoretical and technical sides of their trade under professional instructors and the best artists in their union.

The Painters and Decorators' club, the Painters' District council, and the board of education have collaborated to establish an art school in which both plain and fancy painting is to be taught. The board of education has promised to furnish an instructor, who will write a text book for painters, and the master painters have employed a professor from the Carnegie Technological School of Philadelphia to conduct the trade school.

The new school, which will open next month at 311 West Madison street, the new headquarters of the Painters' District council, will be compulsory for apprentices. They will be required to take two half day lessons each week for three years.



Use and Care of the Scroll Band-Saw

THE FIRST OF A SERIES OF PRACTICAL ARTICLES ON THE USE AND CARE OF VARIOUS WOODWORKING MACHINERY AND EQUIPMENT

By Chas. Cloukey

ONE of the most interesting machines in the wood-working shop, is the scroll band-saw, because of the ease with which circular work may be executed, and all kinds of irregular sawing such as becomes practically impossible without this useful machine.

It does not necessarily follow that because the band-saw is a very simple machine, that it is one of the easiest to operate and keep in order. It is true, however, that if the machine is fitted with two good guides and has good iron wheels and good bearings, that the machine itself is not going to give much bother for years.

Straining and Hot Journals.

I well remember the trouble one workman had with a band-saw which he was running, on account of the heating of the main bearings. Having charge of the machinery at the time, I was interested in finding the cause of the trouble. After considerable study I found that he was straining his blades too tight; and here the real difficulty came in, for I could not make him believe it. He was a big, brawny German, who had been running a heavy machine in the car shops, and contended that a band-saw had to have just so much strain. But as the trouble came with him and disappeared with his departure, I am sure that nothing else made the hot journals. I cannot tell just how tight to strain a saw on every machine, but it should be tight enough to cut a straight line in hard wood in case the saw is sharp and properly fitted. If the strain is put on with a screw wheel, the wheel should be turned up until it begins to feel rather snug, and then the wheels given a few revolutions. If they run stiff to the hand, the tension is no doubt too great, but if they run as easy as though there were no saw on the wheels, it is too loose. One can tell by practice about what the saws will stand, and by the temperature of the bearings if the saw is too tight.

If you are buying a machine, be sure and avoid a wood rim wheel, and see that the frame, including the column, is quite heavy as to avoid any vibration in

the casting. There are band saws in use now which are weak enough in the column to permit the two wheels to bob toward each other when running, and when using quite narrow saws the constant jerking on the blade will cause them to snap in two, whereas, a smooth-running wheel would run them for months without a break. When the nature of the work will permit it, it is well to cut a stick the right length to crowd in between the table and the outer part of the column near the guide slide, and this will protect the narrow saws from being broken by the vibration of the frame.

While a few men will contend that it is not necessary to have tires on the wheels, it is a fact that if the narrow blades are run on the bare iron, the inside points of the teeth will suffer to such an extent that the saw will soon refuse to track with a straight feed. Nearly all bands or tires are made of rubber, but some are made of leather, and men who have had experience with the latter material think there is nothing like it.

How to Put on Rubber Tires.

The job of applying a new rubber tire to a band-saw wheel is one of those particular jobs which is easy enough when you know how to go about it, and one of the most annoying things to undertake if you go about it by guess. In the first place, the bands are apparently made too short to get on the wheels, and if one does succeed in stretching them over the edge of the rim, the stretching may not be even and so throw the perimeter of the wheel out of balance. But the proper way to go about it is to lay the rubber band off into quadrants of four equal parts and mark the four points with pencil or chalk. Now start putting it on by placing one mark over the end of a spoke and slipping on a small handscrew to hold it. Now have another clamp ready and stretch the band in one direction until the second mark comes over the next quarter spoke, and then fasten that. Stretch the same way in the opposite direction and fasten, and now you have the tire half on and held in position at three

points. If you can get some one to lend a hand now you will appreciate it, but if you are all alone, you can get it on the rest of the way by gritting your teeth and pulling with both hands.

Now your band is on and stretched evenly, but it is not cemented fast to the rim, and this is one of the troubles for some men of experience and otherwise. After years of mill experience, I have found no cement to equal good hot cabinet glue for this purpose, and many machine men have told me the same thing.

Of course it should go without saying that the face of the wheel should be perfectly clean before the tire is stretched on, and if it is winter time, the rim should be warmed up with a blow torch until it feels good and warm to the hand. Now to spread the glue, get a short piece of inch gas pipe and insert it between the tire and the rim so as to raise an open space into which a small glue brush may be introduced. Here again, it will be of considerable value to have a helper, so that one may roll the gas pipe around while the other spreads the glue after both surfaces are surely covered, let one man turn the blow torch on the iron part of the rim while the other gently pounds or vigorously rubs the face of the rubber to insure a perfect contact.

It is better to apply a tire on Saturday evening so that the glue may have over Sunday in which to dry, for all the moisture from the glue has to come out at the edge of the rim and unless the iron is made quite warm, the glue is liable to chill and be too thick, and in such an event will require much longer to set and dry than it will if most of it is rubbed out at the start.

Machine Filing

While it takes more or less care to handle the machine as it should be run, the real necessary knowledge coming to a band-sawyer, is in relation to the fitting and care of the saws themselves. And one of the most pertinent facts with the majority of sawyers, is that they are provided with almost nothing in the way of machines for fitting band-saws. Quite a number of small mills have machine sets for the scroll bands, but there are many that have not even this useful little machine. A fewer number still, have machine-filers, and these latter are great time savers in spite of the fact that some hand filers can file as fast as the machines.

When comparing hand and machine filing, almost every point is in favor of the machine, as it will file every tooth with the same bevel as the other, will give the same pressure, and will not leave the teeth of varying lengths. Now I do not mean that any old filer in any old kind of shape will do this, but a good machine properly adjusted will do a better job than the most expert hand filer on teeth small enough to be handled by the machine. Care should be taken in the adjustments of the moving parts so that the file will carry level and not use more pressure than necessary.

It will be noted in machine filing that the last cut of the file comes on the front of the tooth; and while this is made necessary by the feeding mechanism, it should not be followed in hand filing on account of leaving less burr on the point of the tooth than it does when the last cut is made on the front.

Perhaps the principle trouble with scroll bands is that they will get dull before the sawyer has finished his work, and the crowding of dull saws is the most fruitful cause of the breaking of small saws. The

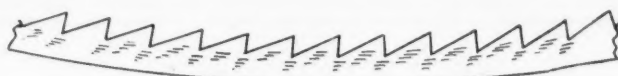


Fig. 1

claim is made by the makers of scroll bands that the principal cause of breakage is long teeth here and there, which take so much more strain than the others that cracks will start at the roots of the long teeth. I believe that this is true in some cases and when long teeth are found in connection with saws such as are shown in Fig. 1, the strain practically all comes on the tooth with the result that a break soon occurs.

The little section of blade shown in Fig. 1 is somewhat exaggerated in curve, but shows that the back is longer than the front. This is a common occurrence with saws which have been in use for a considerable time, and is caused by running too much pressure against the guides, which causes the backs of the saws to stretch more than the front which cuts its way instead of rubbing against the guides.

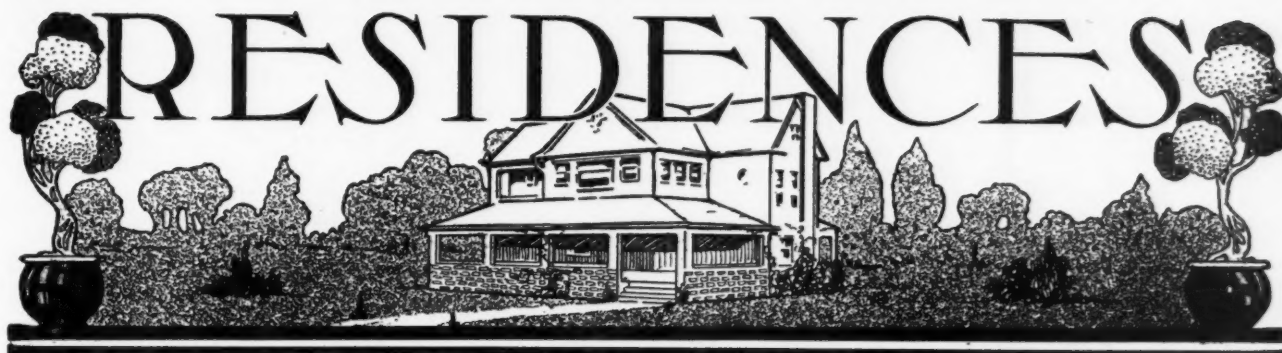


Fig. 2

When a saw breaks it should be stretched out on the floor if there is no filing bench, to ascertain whether it is straight or not. If it is not straight or kinked by the breaking, it will be found to curve like the one shown in the figure. If there are no rolls in the plant, the hammer is the only remedy, and that should be used with caution until the operator has gained some experience. As indicated in the figure, the hammer blows should be struck with the idea of stretching the short parts of the saw until it will lie flat like a new saw. It may be necessary to give it a succession of light taps on both sides, and then it may not. At any rate, there is nothing but time lost if the saw is spoiled to a finish, for one so curved is not worth brazing unless it can be straightened.

Fig. 2 shows a trouble common to the first work in saw brazing and comes from not having the ends of the blades in line when applying the tongs. The remedy for this is the same as that of the long back and can be taken out with the rolls or the hammer.

In the article for next month the subject of saw brazing will be fully discussed, together with other important points in saw dressing.



Attractive Suburban Home

COMPLETE SET OF ARCHITECT'S DRAWINGS, REPRODUCED TO SCALE, FROM WHICH THIS MODERN, SEVEN-ROOM CEMENT-PLASTER HOUSE MAY BE BUILT

THE accompanying perspective drawing shows a very artistic hip roof design of the style that is so popular at the present time. The exterior is cement plaster on expanded metal lath, the plaster to be given a slap-dash finish and painted a light tan

fine rooms, besides the vestibules, reception hall and pantry. The large living room occupies the entire front portion of the house and is made attractive with fireplace and built-in bookcases. This room is finished with a plaster cove. To the right of the reception hall

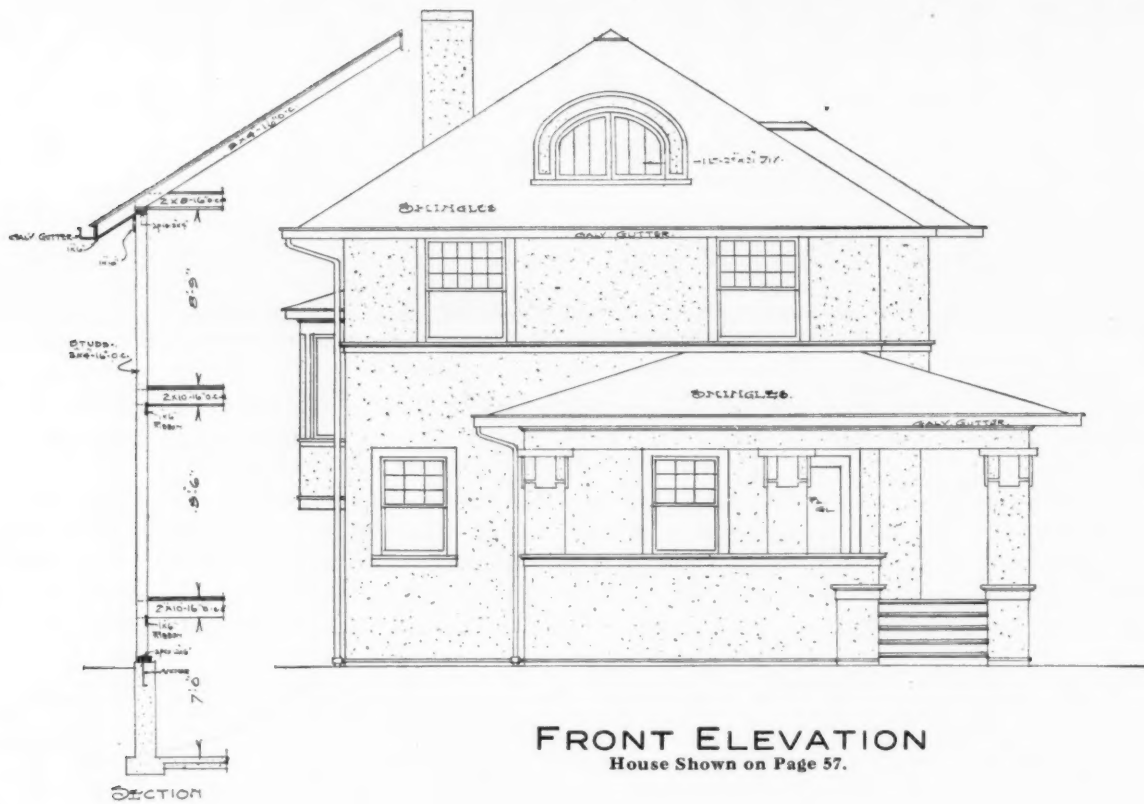


Attractive Suburban Home of Seven Rooms
COMPLETE WORKING DRAWINGS FOR THIS HOUSE ARE PRESENTED ON THE 7 PAGES FOLLOWING.

color. Ornamental wooden pieces decorate the tops of the porch columns; and these are stained dark brown, the same as the window sills, second story band course, porch railings, etc.

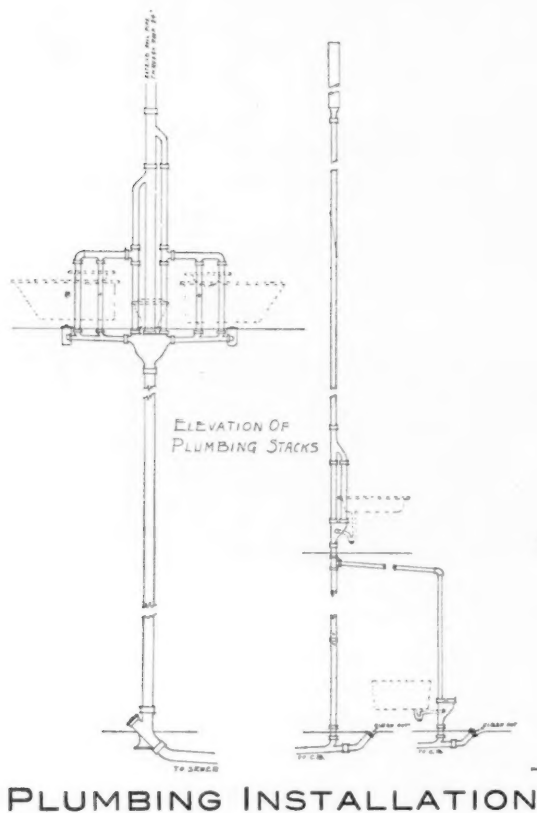
The floor plans show the first floor to contain three

is the dining-room. Ceiling beams are shown in the floor plan, but these beams may be omitted if desired without in any way effecting the desirability of this room. It has a very attractive, built-in sideboard. The kitchen and pantry are arranged for convenience and



ease in doing the house work. The stairway is so arranged that an entrance is had to the main landing from the kitchen as well as from the reception hall. This is a desirable and economical arrangement.

The second floor provides three good bedrooms with ample clothes closet space. There is also a servant's bedroom of smaller size, but very desirable. There is a servant's bath, connecting with this room, which is





LEFT SIDE ELEVATION

an arrangement greatly to be recommended. The main bathroom opens from both the hall and the front chamber.

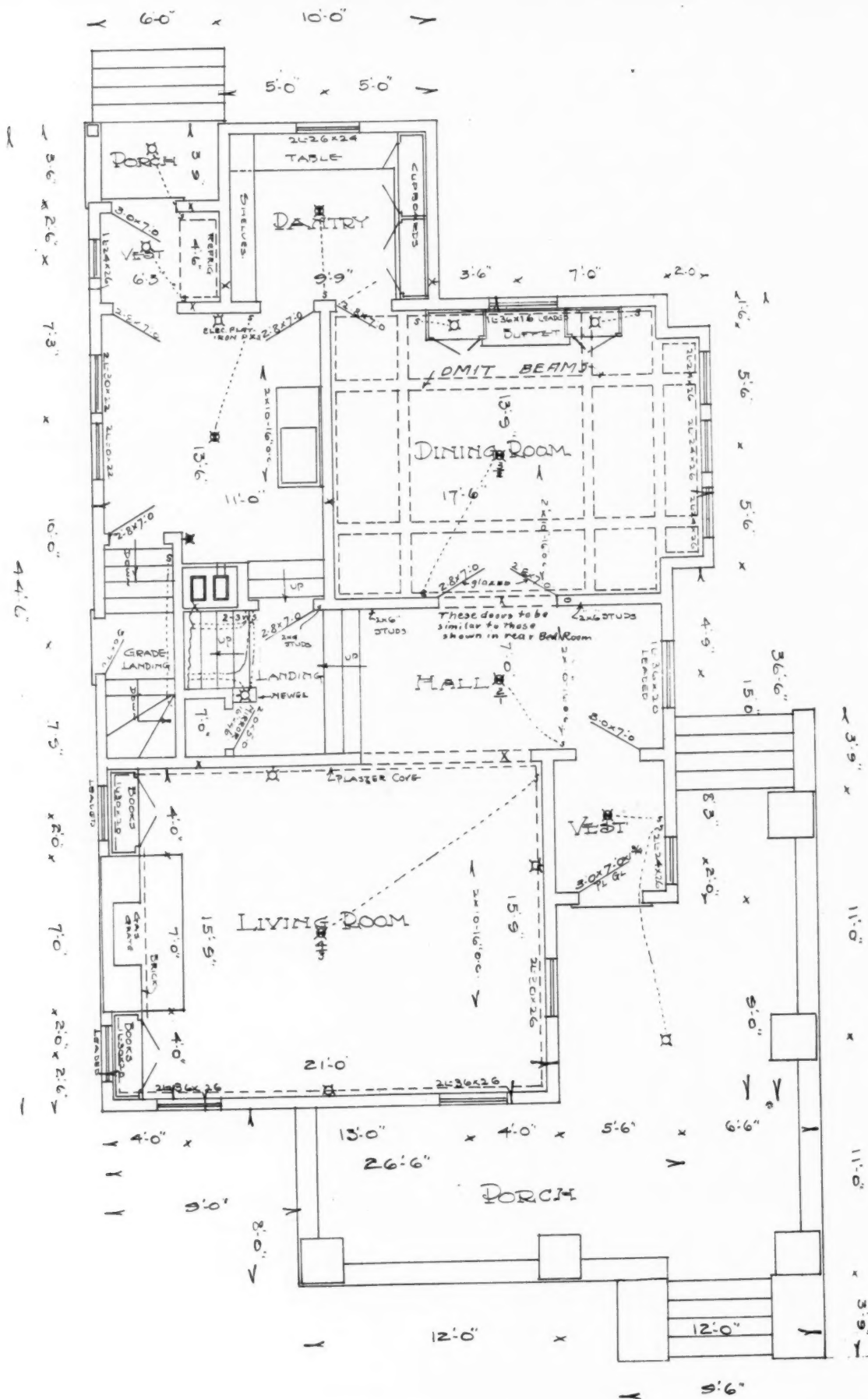
This design is one that will appeal to a great many home builders this season as being practical and de-

sirable. The plans embody a great many new ideas, both for arrangement and interior finish. As the complete set of architect's drawings is here reproduced it should be of great practical value to our readers who have work of this sort to do.



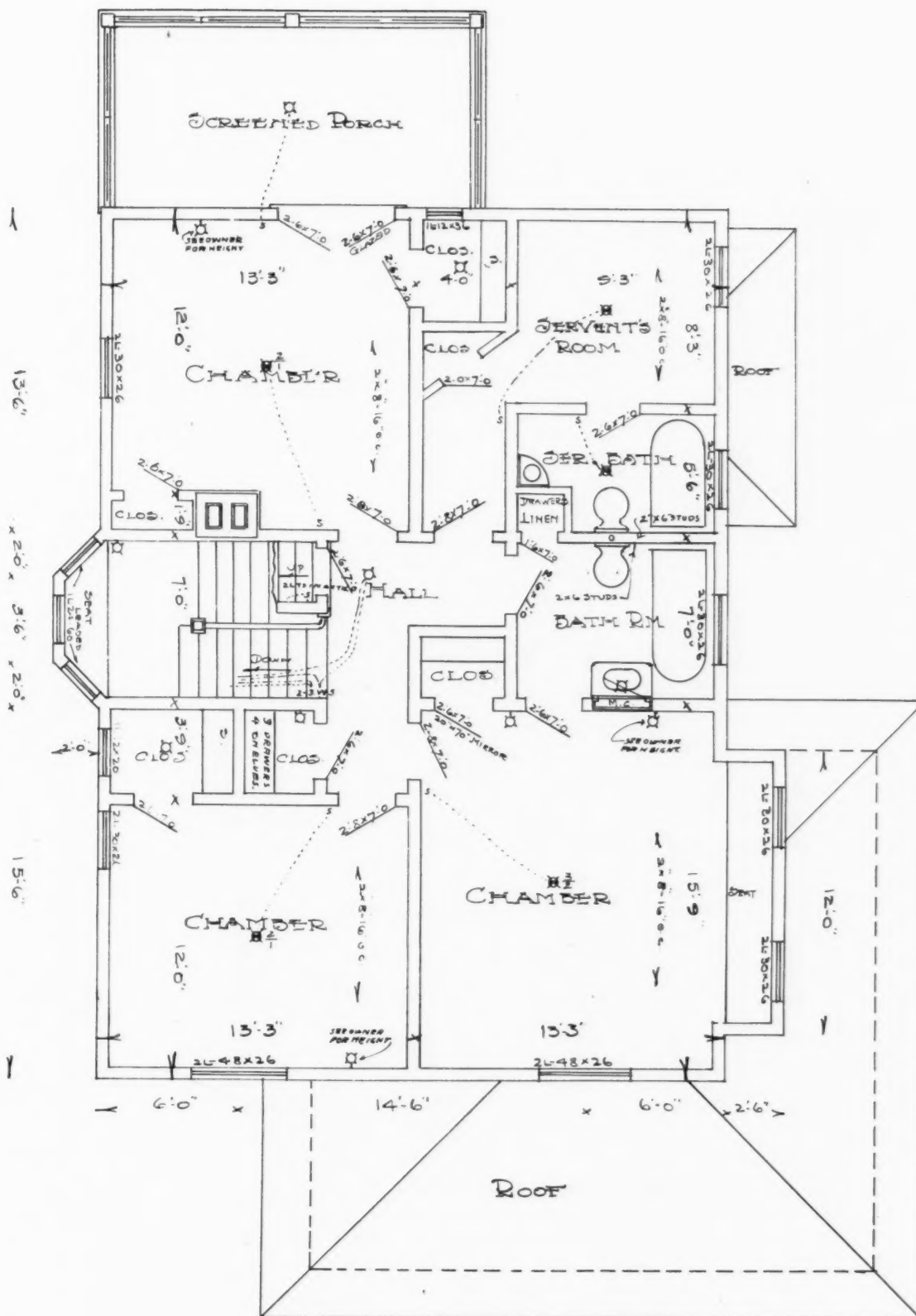
RIGHT SIDE ELEVATION

House Shown on Page 57



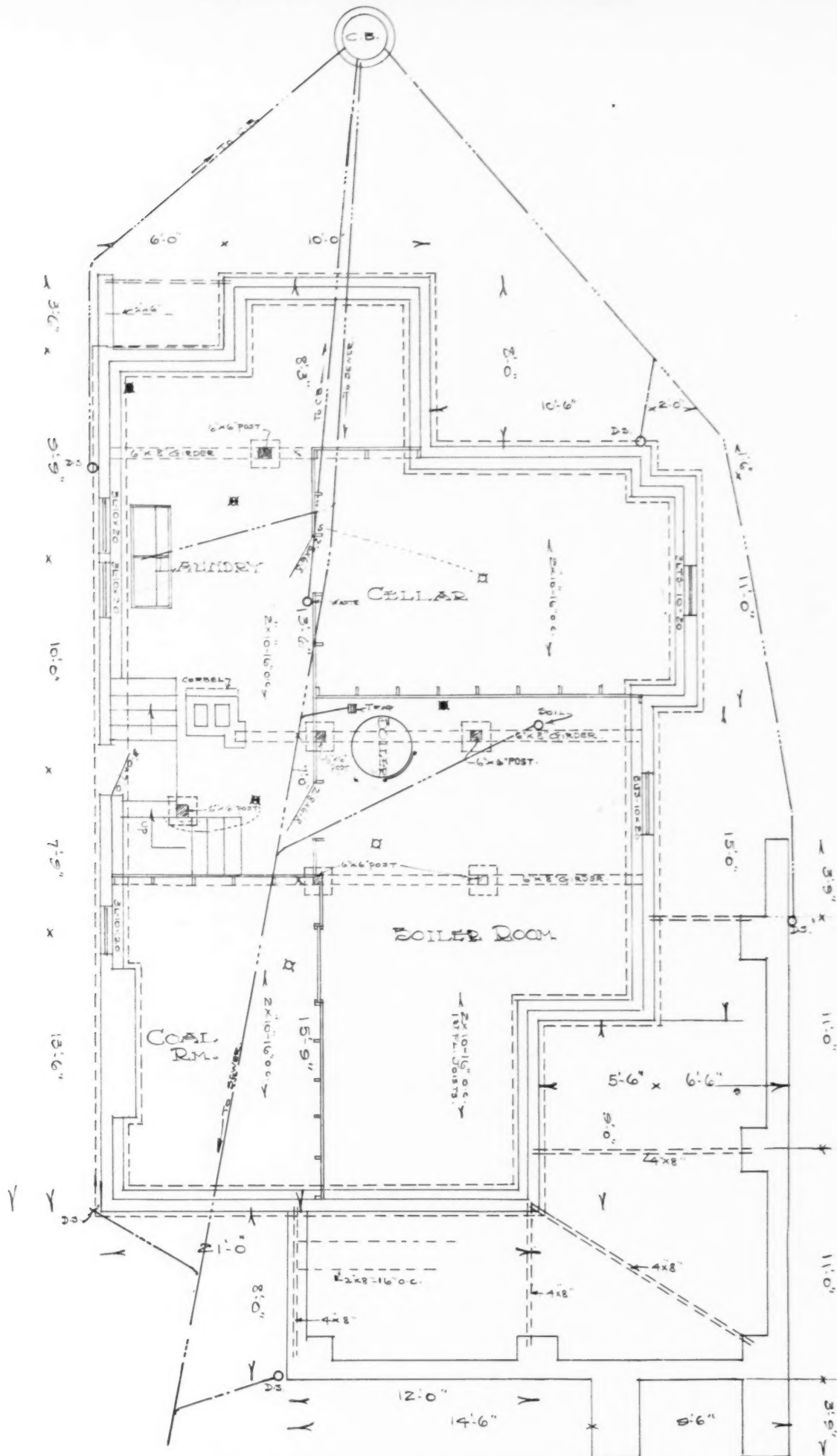
FIRST FLOOR PLAN

House Shown on Page 57



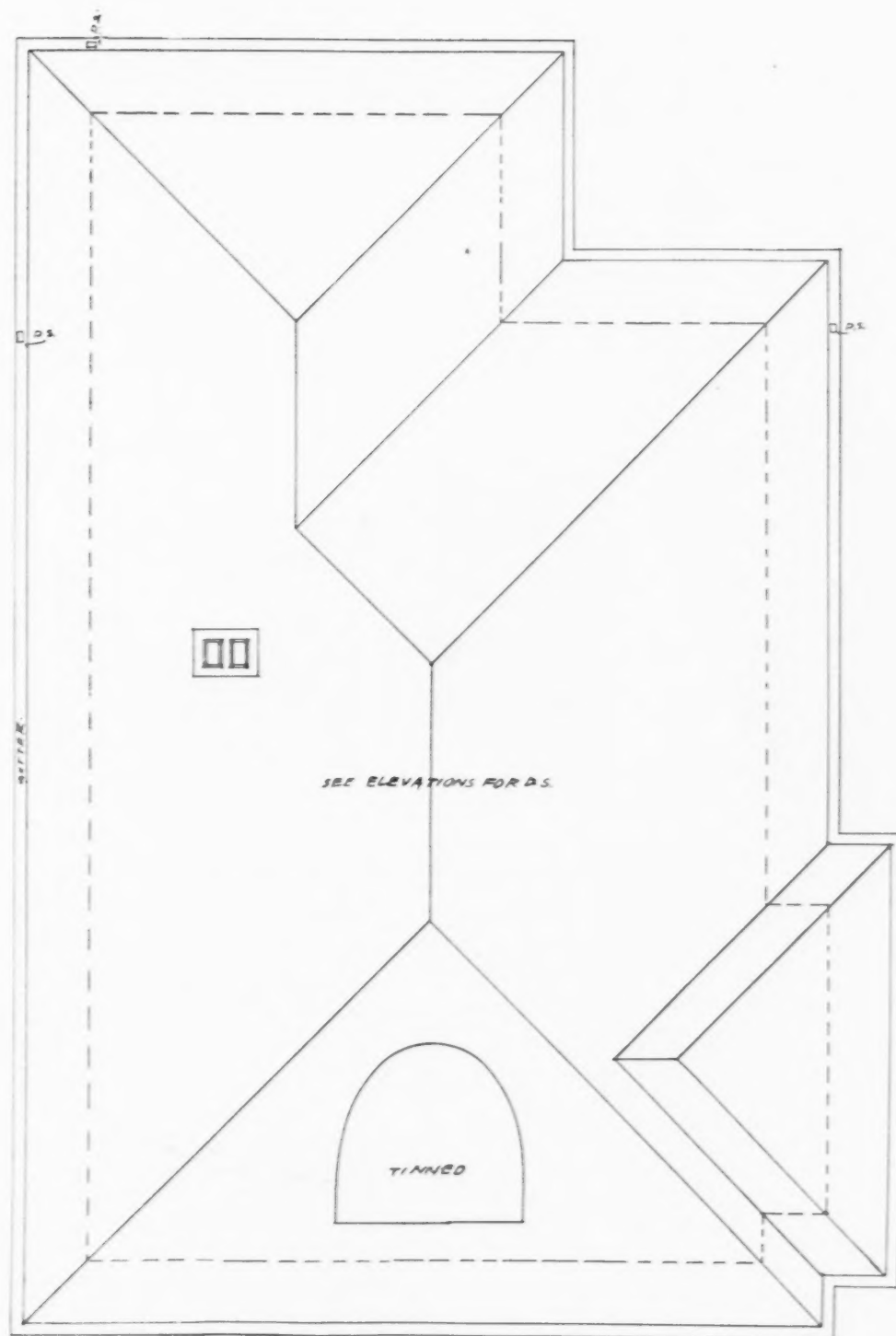
SECOND FLOOR PLAN

House Shown on Page 57

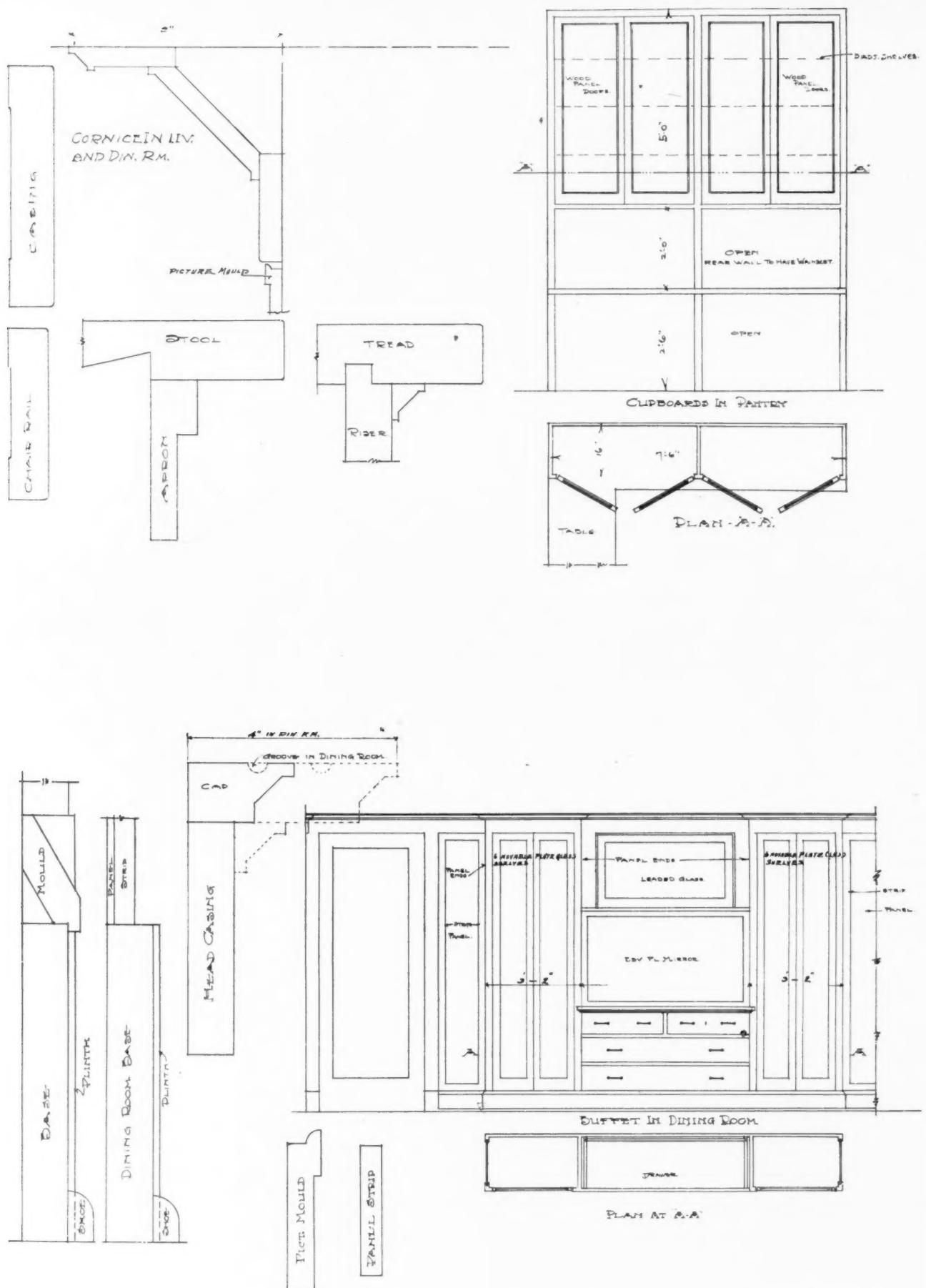


FOUNDATION AND BASEMENT PLAN

House Shown on Page 57

**ROOF PLAN**

House Shown on Page 57



DETAILS OF INTERIOR FINISH

House Shown on Page 57



A Handy Tool Chest

To the Editor:

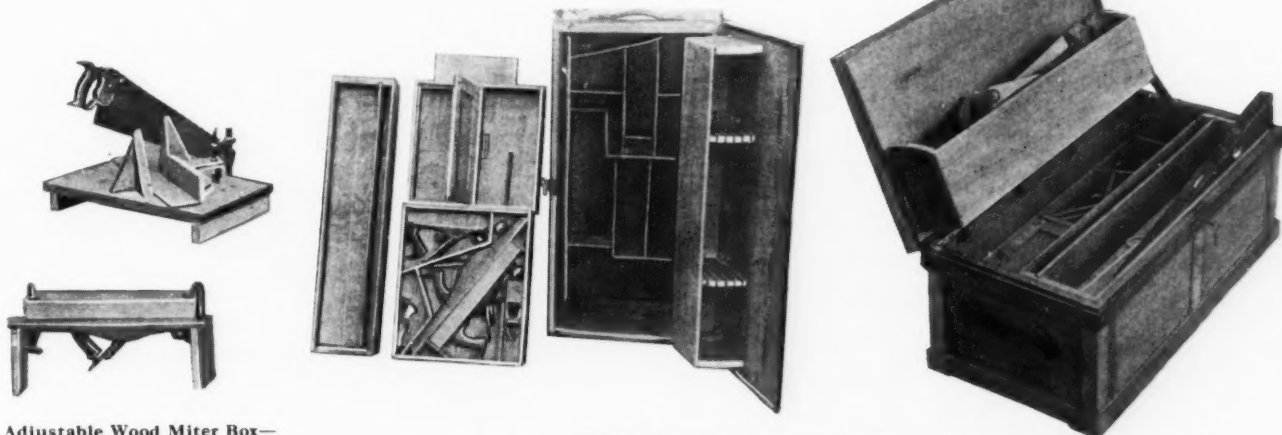
Santa Cruz, Calif.

I am sending you herewith a photograph of my tool chest which I have designed and made myself and which I think is just about the most convenient of any chest I ever saw. There is a special compartment for every tool, and every tool can be gotten at without very much moving of other tools. In this way it is very handy and

trays can be lifted up by handles and placed on the other tray, and then both will slide back and forth to give access to the bottom of the chest.

Alongside the chest will also be seen two very handy tools that I have made. One is an adjustable wood mitre box and the other is what I call my "buzz planer." This is very handy for dressing up small stuff, shaving off mitre joints, etc.

I also have a home-made emery grinder that "beats



Adjustable Wood Mitre Box—
"Buzz Planer"

Handy Tool Chest with Place for Everything

besides keeps all the tools in first class condition.

You will note from the pictures that the saw case is fastened to the lid of the chest at the back. Blocks hold the saws in position and keep them from rattling around and dulling themselves. The deep till at the front of the chest holds the spirit level and miscellaneous tools that are constantly in use. When this till is removed the two short trays in the middle of the chest are uncovered. These hold the plane and other tools. One of these

the Dutch" for keeping my tools in proper shape. It is made from an old high-wheel bicycle, rigged up to a good little emery stone which runs on ball-bearings. The picture shows how it works.

WILLIAM A. CLAPP.

Dead Air Spaces vs. Insulation Filling

To the Editor:

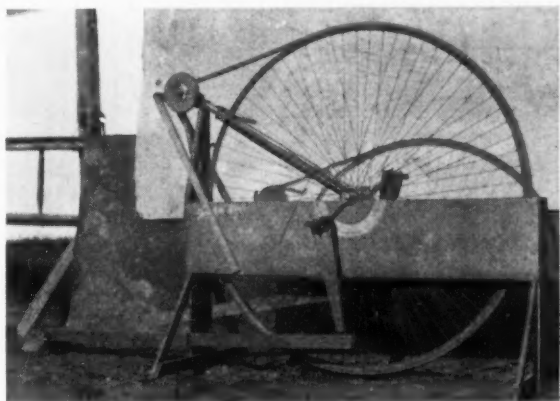
Calmar, Ia.

I intend to put up an ice house 12 by 16 by 8 for three families. How shall I build it so as to get the best results?

I wish to learn if the air spaces should be open at top and bottom or closed at either or both places. I intend to line the rafters on lower side with common boards and put a good sized ventilator in center of roof. I have seen it recommended (and I suppose it is all right) to fill space between studdings with sawdust, but I don't want to do it because it rots out the walls in a short time. I thought that two spaces and plenty of sawdust between wall and ice would do pretty well. How should the bottom be prepared and how about the foundation?

G. A. NYSTROW.

Answer: The air spaces should be left dead rather than connected with the outside air. It is a mistake to suppose that these dead air spaces are as good or even better insulators than the same space filled with sawdust or other filling material. Such filling prevents or at least



Old "High-Wheel" Turned into a Serviceable Emery Grinder

retards the circulation of air which always takes place in a vacant space between a cold and warm wall. It is this circulation which causes moisture to collect on the cold side of the wall and it does not as is generally supposed pass through the woodwork from the ice.

If you can obtain spruce shavings it would make an ideal filling for the places between the studs and would not be liable to rot quickly if wall is packed so as to prevent as far as possible the circulation of air. EDITOR.

+

A Mixed Roof

To the Editor:

Page, North Dakota.

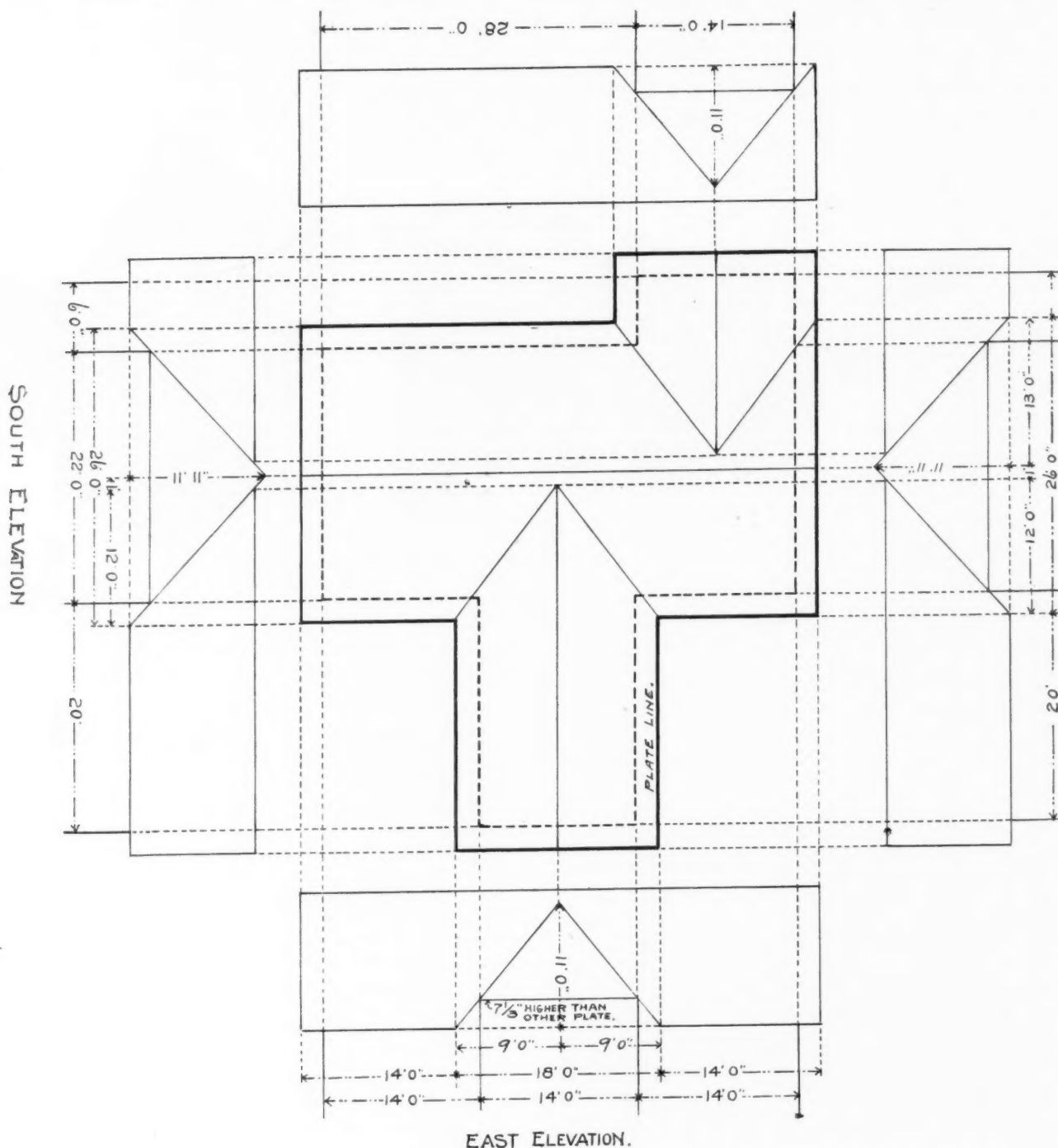
I am enclosing herewith a sketch of my house that I am going to remodel, the roof being the only thing that bothers me. I want a 11-24 pitch on the main part and

I want the narrower gables to be steep enough so that the ridge will be nearly a foot down from the main ridge. I want the layout of the rafters and how to get their lengths.

J. J. WEINAULT.

Answer: From the sketch enclosed by Mr. W., we have prepared the accompanying plan with elevations of the respective sides. As will be seen a roof of this kind requires unequal pitches, yet it is to have equal projection of cornice, which in this case, is two feet.

For roofs of this kind, the plancers should be level and the best way to accomplish it is to let the ceiling joist project over the plate the desired projection and nail a fencing plank at the end of the joist, or lookouts for a plate on which to rest the foot of the rafters. The valley will rest at the intersection and will not pass over



Roof Plans with End Elevations Showing Gables of Unequal Pitch

the intersection of the wall lines as in even pitches. This method also avoids the raising of the wall plate on the steeper side, which is a perplexing problem to many carpenters. In this roof, the projection being 2 feet the difference in the height of plate is the amount one roof rises above the other in a 2 foot run, less the depth

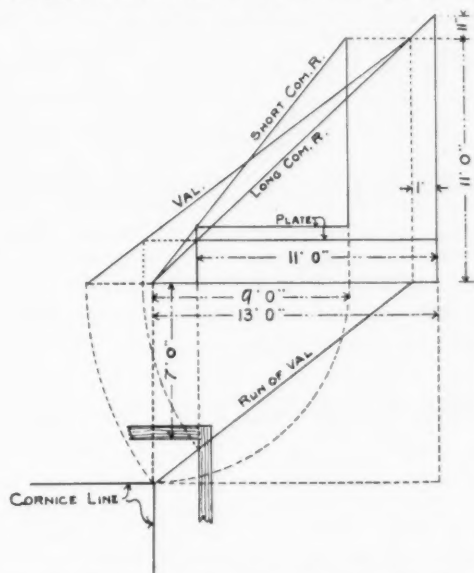


Diagram Explaining Use of Steel Square for Finding Lengths and Cuts

of the seat cut, which is reckoned to the center of the rafter.

But as we said before, it is easier to let the foot of the rafter rest at the lookout line and thus avoid the raising of the plates, back measuring, etc. From the elevations as shown, the lengths and cuts can be arrived at in the usual way.

Fig. 2 shows the layout for finding the lengths of the rafters, etc., in connection with the steel square.

A. W. Woods.

How to Build a Log Cabin

To the Editor: Milwaukee, Wis.

As I have been a subscriber and reader of your valuable paper for some time, I will ask you to kindly publish in the next issue a plan and details in general of a log cabin. Before long I expect to build one and I would like to have some idea of its construction.

I think this will also be interesting to my fellow readers.

J. M. T.

Answer: We would be glad to give the desired information, but we must confess that our knowledge of log house construction is limited. However, the subject is a good one and we hope some of the readers will come forward with more practical information than we are able to impart.

The subject is one that furnishes a reminiscent thought along the line of home building. We dare say that a comparatively small number of the readers of the AMERICAN CARPENTER AND BUILDER ever saw a real log house, especially during its construction; how workmen hewed the great logs from the rough to flat surfaces on two sides with a great wide bladed instrument called a broad-axe.

The blade was beveled one way only and was kept as sharp as could be made on the grind stone and whet-rock and the owner thereof was always very particular as to handling his axe. It was needless for the boys to apply for a tryout. Another instrument they used, was a for-

midable looking tool called an adz. It, like the broad-axe, had a short handle, only it had a sort of a compound curve to it. This instrument was used more for a surfer; to fit one timber against another, as a brace for a mortise and tenon, etc. This instrument was used a good deal like a boy digging potatoes with a hoe and with the handle between his legs and using both hands. In the case of the adz, the handle being short, the man stood about directly over the place to be surfaced and struck toward himself.

As we remember it now, the man with bow-legs stood the best chance of saving one or both of these useful members, as it gave a chance for a miss-slick to let the adz pass on its circuitous motion, provided the stroke was not with too much force. In that case, it was liable to cut the manipulator's head off and thus put a grand finale to the act. We never tried to use one of these instruments, which perhaps is the reason we are permitted to tell the story.

But nevertheless some of the log house builders were skilled in the handling of these tools as their works bear silent witness. We have in mind an old log house now standing as a relic of other days, in a prosperous farming section of Illinois which was once heavily wooded with the sturdy oak, black walnut and other timber. These have long since disappeared before the hand of man and to-day the farmer rides over the fields on a cushioned seat, cultivating the crops with little thought of the struggles of others who made it possible for him to perform his work at ease. Instead of the resounding ring of the woodman's axe, the honk of the automobile is heard to give warning to the unsuspecting less they too be numbered with the things of the past.

There stands the log house but not as it was originally erected. It was first built for a Court House and in it the lamented Lincoln, Oglesby, and others stood before the bar, pleading for justice for their clients. But after a while a more commodious Court House was needed and the log house was moved from its site and then it was used for various purposes until some of the older residents, remembering the incidents of the past, through which it had gone, caused it to be moved again, this time to a park where it was reconstructed. But it had lost much of its former self in the lapse of time. Some parts of it having decayed, other logs had to be substituted and it is here that the workmanship of the old and the new stand out in bold contrast. Suffice it to say, that if the new part was meant to be a duplicate of the old, it was a failure. The tight fitting dove-tailed corners and the smoothly hewn surfaces are lacking.

There the remnants stand as a monument to the pioneer mechanics who blazed the way through the wilderness, and started the mighty wheel of commerce on its ever onward movement. They did their part well, and it is fitting that they should not be forgotten.

EDITOR.

For Truing an Emery Wheel

To the Editor: Sturgeon Bay, Wis.

Replying to the inquiry of James S. Robins in regard to truing up an emery wheel he will find the following method effective.

Make a handle similar to a file handle, place a large nail or spike in the end, with the head about 1½ inches from the end. Before driving the nail in, place enough iron washers on it to fill up the place between the head of the spike and the handle. Apply to the emery wheel at an angle and look out for emery chips. The edge of a wheel can be made round or thin in a few minutes with this device.

J. CARRINGTON.

Door With Short Side Windows

To the Editor:

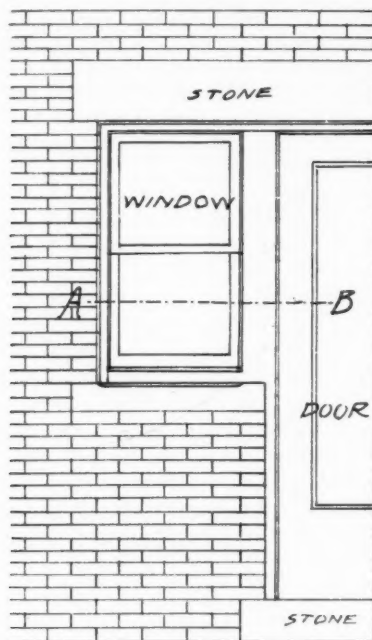
Bellevue, Ky.

Will you kindly show me details of an entrance door in a 9-inch brick wall with double hung windows on each side, the space below the windows to be bricked up solid. I do not quite understand the proper arrangement of the parts where the door and window frames come together.

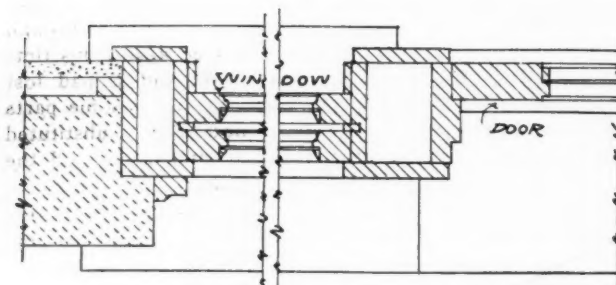
I am a new subscriber to your monthly magazine and think it a great paper.

F. BENKERT.

Answer: The details herewith will show you how this work may be done. Ordinarily, however, such windows



ELEVATION



SECTION "A-B"

Entrance door with Short Side Windows

would not be arranged this way, but would have a wood panel underneath the window down to the floor. Then the frames for the door and the two windows would be built all in one and the difficulty you have encountered in this problem would not have presented itself. The brick wall underneath the windows makes a substantial looking job, but since there is nothing to stop the window sills against on the door side it looks rather odd.

EDITOR.

Fire Proof Bank Vault

To the Editor:

Appleton, Wis.

It is always a great pleasure to me to receive your magazine at the first of the month, and read all of its contents, for everything seems to be of some interest to me

especially any detail of construction, which it always contains in one manner or another.

I am going to ask a favor of you, and that is to publish details of construction of a fire-proof bank vault, that is the most modern construction. The way we construct them is to use an 8-inch brick wall on the inside, and a 12-inch brick wall on the outside with an air space between.

The cover or ceiling is constructed first with a 6 inch reinforced slab of concrete on the bottom then a two inch layer of hollow tile, and a 6 inch top covering of sand. Vent pipes are run into the air-spaces so as to keep the inner walls cool, in case of a fire. Would you please publish some detail, or inform me in your columns if that is the most up-to-date method of construction.

EDWARD A. WETTENGEL.

Answer: We know of no better system for this work than the one you suggest. It might be better, however, to leave the air spaces as dead spaces instead of connecting them with the outside air.

EDITOR.

How Big to Make Fire Place Throat

To the Editor:

Suttes, Calif.

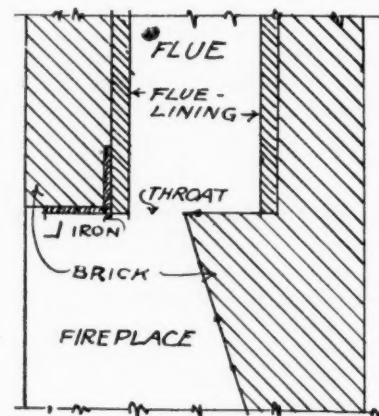
I have been a subscriber ever since your magazine started. Have read every number and also have them all filed away where I can refer to them when I wish, I find lots of good information in every book.

Here is a little point in fireplace building that bothers me:

How much bigger, if any, should the flue be than the throat?

WALTER J. EACHUS.

Answer: The fire brick forming the back of the fire place should be brought inward toward the top, inclin-



Showing Relative Size of Throat and Flue

ing about 3 inches to the foot, so that the opening into the flue, or throat, as it is commonly called, will not exceed 3 or 4 inches in width. The proportion of the throat determines in a great measure whether the draught of the fire place will be good or bad.

A damper should also be provided for closing the throat. These are usually made with a cast iron frame containing a door which may be pushed back to give the flue opening. This device can be obtained from most mantel dealers and generally insures a good draught and a saving of fuel.

The size of the flue is determined by the size of the opening; a common rule is to make the area of the former not less than one-tenth the area of the latter which would make an 8 by 10 inch flue ample in size for a fire place with an opening 24 by 30 inches or 30 by 30 inches.

EDITOR.

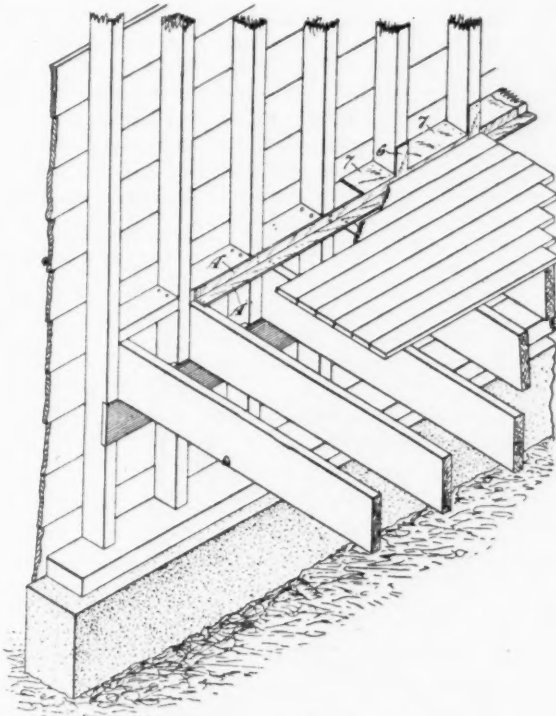


CONDUCTED BY WATSON & BOYDEN, PATENT LAWYERS AND SOLICITORS, WASHINGTON, D. C.

Rat Proof Building Construction

991,751—Patented May 9, 1911, by Carl D. Salfeld, of San Francisco, Calif.

The object of this invention is to prevent rats, mice, etc., from gnawing their way through small cracks which are liable to form in wooden buildings. To this end a metal strip (A) shown as an angle iron is laid along the floor joists adjacent to the studding as clearly shown in the illustration. If desired it may be extended as indicated at 6 and 7 so as



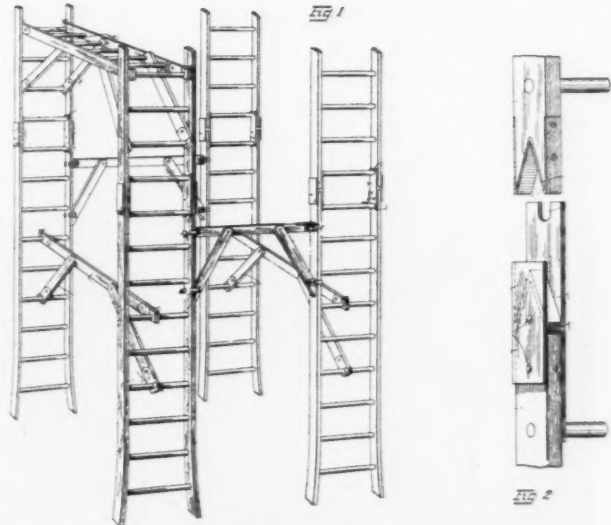
Metal Strips Prevent Cracks from Opening

to over-lie the studding and runner. This effectually stops any crack which may tend to form at this point.

Ladder-Scaffold

991,565—Patented May 9, 1911, by Fred Valentine of Cleveland, O., assignor to the United States Ladder-Scaffold Company, of Cleveland, Ohio, a corporation of Ohio.

The object of this invention is chiefly to provide improved means whereby the several ladder sections may be quickly assembled and taken apart and when assembled will form a scaffolded structure of great rigidity. Particular attention is directed to the form of joints shown in Figure 2 of the illustration. Other details are shown which space does not permit of describing.

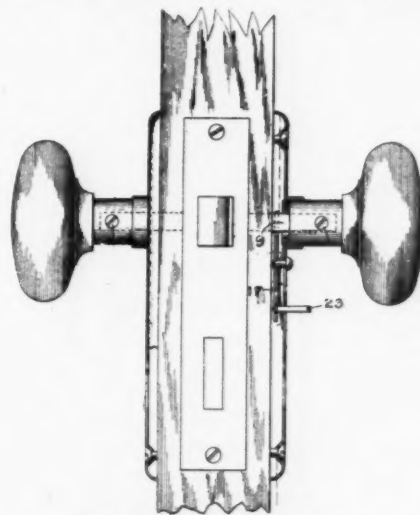


Ladder-Scaffold

Knob-Spindle Fastener

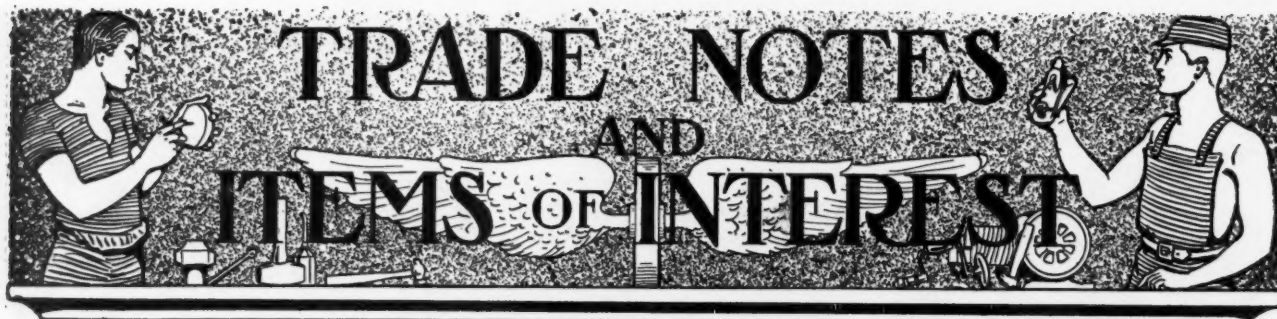
991,018—Patented May 2, 1911, by John Powers, of Los Angeles, Calif.

This is an improved inside latch adapted to be attached to any well known make of door lock. It consists of a sliding plate (17) mounted inside the inner escutcheon plate and



Device Locks any Door Knob

having a square notch in its upper edge adapted, when the plate is moved upward by means of the thumb piece (23), to embrace the square shank (9) of the knob spindle and prevent it from being turned.



Sawing a House in Two to Move it

Few feats of house moving have presented the difficulties that met the contractor charged with the transfer of a three-story frame dwelling from College and Francesca avenues, Somerville, Mass., to a site more than a mile away, says *Popular Mechanics*.

The method employed was equal to the emergency, however, and to get the building off of its 10-foot elevation above the street and move it, it became necessary for the movers to saw it completely in two. Each section was then braced and moved by the "roller process" to its des-



Moving a House by Cutting it in Halves and Taking it to its New Location in Two Loads

tinuation, and the two sections again brought firmly together and fastened. The sections were almost 40 feet in height and measured 20 by 35 feet at the base. Thus it may be easily seen that it was no small job to move such a topheavy piece of house. It was feared that the slightest puff of wind might turn over the sections while in transit, but by loading the lower floor with bricks the sections were made quite stable.

After joining the two sections together the mark of division was invisible to the casual observer, and only on close examination was it possible to see the saw cut.

A Moving Land

One of the broad slopes of Mont Gringuez, France, is reported to have become detached from its foundations, and to have moved over a distance of nearly a quarter of a mile, carrying with it the soil, meadows and woods, and covering up in its passage roads and bridges that stood in the way. A chestnut grove has traveled 500 feet without suffering any apparent damage, but many small lakes have been formed by the damming of the waters.

Sash Balances for New Buildings

Architects and builders have for years been familiar with "Pullman" sash balances. Their mechanical correctness is generally conceded; likewise, their durability and

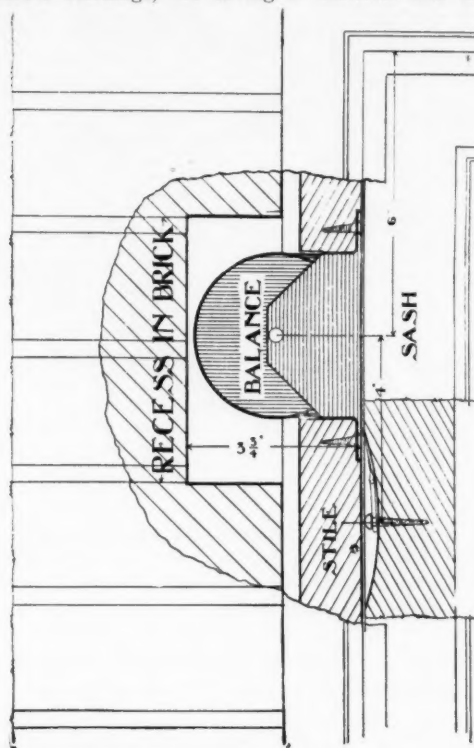
efficiency. Their general use has been retarded because individual fitting was necessary for the reason that each weight of window required a different size balance. This made it necessary to cut the mortises by hand and made the cost of installation more than for cords and weights.

The Pullman Mfg. Company of Rochester, N. Y., has overcome this objection entirely and is now supplying what they term, a Unit System Sash Balance. The Unit Balance is made on exactly the same principle as the "Regular" Pullman balance of which there are upward of 5,000,000 in use today.

The Unit balances have a uniform size face plate. This permits the mortises to be cut at the mill just as mortises for sash pulleys are now cut.

The use of "Pullman" Unit Sash Balances is made still more easy by the fact that they are supplied at a flat price per window for all windows in a building.

Sash balances require no box frames, nor pockets through which to get at the weights. This saving in woodwork, added to the cost of the cords, weights and pulleys in nearly every case, will exceed the cost of Unit Balances. In brick, stone or concrete buildings, the saving is material and there still



"Pullman" Sash Balance in Brick Wall. Note Omission of Box Frame

remains in favor of the balances the less cost of putting in, the greater durability and better appearance of a Unit Sash Balance.

The Pullman people have just issued a new catalog with complete drawing showing the installation, which they will be glad to send upon request.

C. H. & E. Builders' Hoist

The C. H. & E. line of labor saving machinery equipment for contractors is well known to readers of the *AMERICAN CARPENTER AND BUILDER*. Their portable saw rig has proved a money-maker on many jobs. Now a thousand-pound capacity builders' hoist is offered, it being of the double acting type and connected up with either electric motor or gasoline engine, as desired.

This hoist is claimed by the manufacturers to be the simplest and most serviceable hoist on the market today. Carpenters and mason contractors cannot longer afford to operate steam-driven equipment to hoist their lumber, brick and mortar when such a well constructed and reliable gasoline or motor-driven hoist may be had.

A brief specification of this hoist is as follows: Six horse-power water hopper cooled engine, or five horsepower alternating current electric motor as desired. The hoist with engine or motor is mounted on 4 by 6 inch and 3 by 8 inch timbers on wheels, making it easy to move from job to job. The starting and reversing handle connects with a fiber cone clutch. The brake lever can be so set as to be used with either hand or foot, as the operator wishes. The brake band is the only wearing part of this hoist and it can very easily be replaced when worn. All gears are machine cut and all shafts turned and ground; all bearings rabbeted and provided with oiling cups. The hoist is double acting, with a 40-inch diameter hoist drum. Its lifting capacity is 1,000 pounds, handling the load at 200 feet per minute; 500 pounds at 350 feet per minute, and 350 pounds at 400 feet per minute.

Each outfit is thoroughly tested and is ready to run when delivered. Weight of hoist with engine complete, 1,250 pounds; motor, 1,120 pounds. This machine is sold under an absolute guarantee that it will be entirely satisfactory.

George D. Smith, 814 Fisher Building, Chicago, Ill., is the selling agent for this hoist, as well as for the other C. H. & E. builders' equipment. Those interested should write to him at once for complete information concerning these machines.

Old Hardware Man Makes Change

Mr. George F. Taylor of Scranton, Pa., who has traveled for the Russell & Erwin Mfg. Co., New York, for the last fourteen years, has connected himself with The James Swan Company, Seymour, Conn., who manufacture a very large line of mechanics' tools, such as augers, bits, chisels, screw drivers, drawing knives, gimlets, hollow augers, nail sets, boring machines, etc.

Three Cement Shows

Three Cement Shows will be held by the Cement Products Exhibition Co., 72 West Adams Street, Chicago, during the first three months of 1912. The places and dates are as follows:

New York, Madison Square Garden, January 29 to February 3.

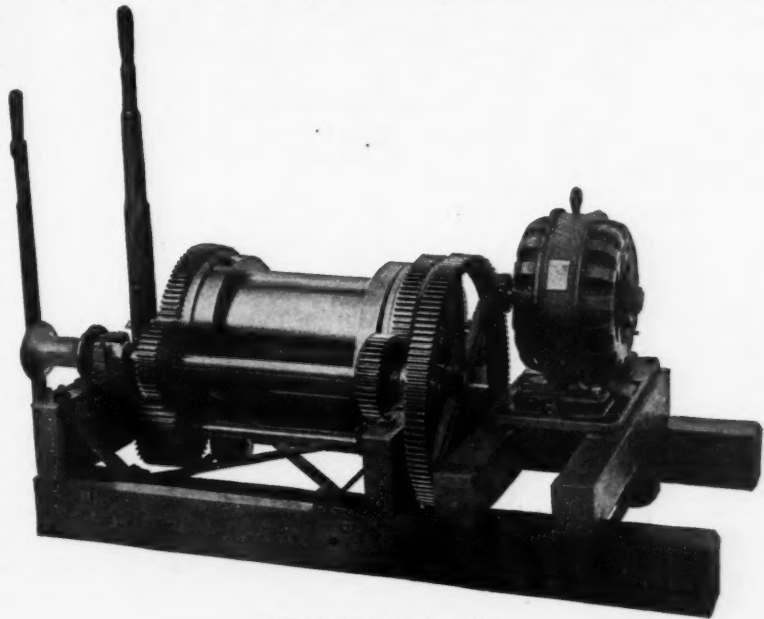
Chicago, Coliseum, February 21 to February 28.

Kansas City, Convention Hall, March 14 to March 21.

The addition of Kansas City Show was decided upon after a letter ballot taken among the exhibitors at the previous shows. The letters received from the exhibitors indicated a strong demand for an exhibition in Kansas City in addition to those at New York and Chicago and

the Cement Products Exhibition Co. determined to hold a show west of the Mississippi River in March 1912.

Preliminary plans for the shows are now underway. A number of changes in the rules and regulations are under contemplation and some changes have already been made. Previous exhibitors will be glad to learn that the management has decided to show upon each large sign furnished the name of the exhibitor and his address, together with a short description of the business. Any additional cardboard signs desired will also be furnished by the management free of charge.



C. H. & E. Builder's Hoist

A Roofing Book Worth Having

A booklet that sets a new standard in catalog work has just been issued by the Bermingham & Seaman Co., 1208-26 Tribune Bldg., Chicago. This describes their "Burmite" ready-to-lay roofing and demonstrates the wonderful possibilities of its use as a high grade roofing and siding material.

The most striking part of the booklet is the illustrations which are printed in six colors. These are photographs of barns, garages, summer cottages, bungalows and fine city houses on which "Burmite" slate surfaced roofing and siding have been used. It is stated that the six colors are necessary to bring out the full beauty and strength of natural coloring of the slate-red and the "Stoddard" slate-green of these materials in connection with the colors of the other parts of the buildings and of the surrounding grass and shrubbery.

This new "Burmite" booklet is notable just for these pictures, and every reader of the *AMERICAN CARPENTER AND BUILDER* should have a copy of it.

Valuable information is also contained relative to the structure of "Burmite," what it is and how it should be used. This high-grade flexible-cement-burlap inserted ready-to-lay roofing or siding material, with its outside coating of slate chips, is making quite a sensation in the building work. It is guaranteed for 10 years without coating. When properly applied it is said to last from 15 to 20 years. The color is absolutely fast and non-fading. Write for a copy of this interesting and valuable new booklet and request at the same time a sample of "Burmite."

Free Trial of Little Giant Concrete Mixers

The Ballou Manufacturing Company, 40 High street, Belding, Mich., are now making a proposition that ought to appeal to contractors and builders who are in the market for

a concrete mixer. Having full confidence in the ability of this mixer to make good, they have adopted the policy of shipping their Little Giant concrete mixer to any responsible party anywhere for a free demonstration.

By this means you can put it right on a job and subject it to all the tests which your work may require. They ask contractors to tell them briefly what class of work is being done and they will send the proper machine; or, if preferred, a selection can be made from their complete catalogue and the machine desired sent.

The manufacturers make some strong claims for these machines, and it is evident that they stand ready to back them up and prove them to the satisfaction of any contractor or builder by a free trial and demonstration of the machine right out on the job.

They say, "Watch it work, compare its features with any make, and if it proves itself to be the safest and best investment, try it; otherwise return to us without placing yourself under any further obligations."

Investigate this proposition at once, for every day of delay may mean dollars wasted to you. Write for their catalogues, which show just what these machines are.

"Lignine Wood Carvings"

A very interesting product is illustrated herewith—Lignine Wood Carvings—which are manufactured by the Ornamental Products Co., of Detroit, Mich. Architects and builders who have tested them thoroughly speak very highly of them, both as to their artistic design and their strength and durability in use.

A very beautiful catalogue, showing the entire line of carvings made by this company, will be sent on request to any reader of the AMERICAN CARPENTER AND BUILDER. They



Example of "Lignine Wood Carving"

will be glad to send also a sample of the Lignine Wood Carvings.

The Practical Side of the Pergola

The growing popularity of the formal garden has aroused an increased interest in the pergola. Many means of supporting the overhead work have been used—stone, cement, stucco, etc.—but nothing seems quite so appropriate for this use as wood columns. Especial success has been obtained with the Patent Lock Joint column manufactured by the



Want to save money?

Save time lost using scaffolds with bolts and nuts

Nuts are sometimes missing when you are ready to put up the scaffolds—thus time is lost.

Your men often drop a nut to the ground, when trying to put it in place—again losing time.

It sometimes requires two men to put such brackets in position and take them down—more time lost.

The threads and nuts get rusty and require oil—still more time lost.

Boys occasionally take nuts off. This makes danger for your men, when they get on scaffold next day—and again loss of time.

The bolt rods sometimes get bent so the nut will not turn on the thread—then you can't use them—total loss.

Wheeler Safety Scaffolds

are great time savers. They have no separate parts to come off and get lost and no screw threads to rust and cause delay. Yet they are adjustable and self-locking. Always ready for use. One man can put up a dozen in fifteen minutes and take them down in less time. They fold compactly also.

Write now for our trial offer.

American Steel Scaffold Co.

64 McGraw Bldg.,

Detroit, Mich.

UNION METAL COLUMNS

Union Metal Columns follow the classic designs of ancient Greece and Rome.

In the substitution of steel for wood not an atom of charm or beauty is lost—but a new element of value is added.

Union Metal Columns are indestructible—used in Poreh, or Pergola, they will outlast the structure in which they are incorporated.

Specified by the most eminent architects and designers of America, these columns have earned an enviable repute even among those who deprecate the slightest departure from ancient forms.

The catalogue which we will be glad to send you upon request, illustrates the artistic use to which Union Metal Columns have been applied in beautiful homes and buildings throughout the country. We have a special proposition for Builders and Carpenters. Write to-day.

The Union Metal Manufacturing Co.
401 Maple Avenue
CANTON, OHIO

Build Artistic Stairways From Gordon-Van Tine Stock! Save 50%! Special Millwork Catalog **FREE**

Our Stair Department Will Save You Big Money

Through our ceaseless efforts of selling reliable stairwork at cost plus one small profit, we have been able to produce and sell stairwork at prices which leave a handsome profit for the contractor. In our Grand Free Millwork Catalog, we itemize individually, each and every article required for the stairs, and explain fully just how this material comes to you and attach net prices. With this information at your command, an infinite variety of arrangements of stairs can be figured within a few moments, and you know the exact cost without entrusting your interest to any outsider.

The fact that part of this material is already machined ready to go right into the stairs, reduces the erecting cost very materially. We use only thoroughly kiln-dried material in making up the different parts of this stair stock, and only the most skilled and expert mechanics are employed in the production of the finished article. By using kiln-dried lumber you avoid any of the annoying effects of shrinking or coming apart of the stairs after they are put in the building. The itemized list for a flight of stairs which is given on this page, shows you at a glance how reasonable the material for a complete stairs can be purchased.

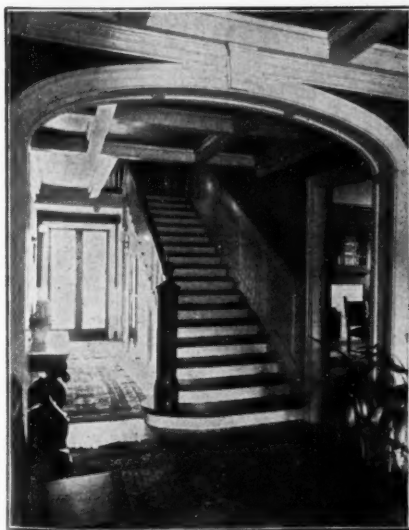
The fact that you have had no previous experience in the stair building line should not deter you one moment from learning its simplicity now. If there are any points which are not practically clear to you regarding the proposed stair for which you are in the market, write us, and we will give you the advice of an expert stairbuilder.

Vast Assortment of Oak and Yellow Pine Stair Material

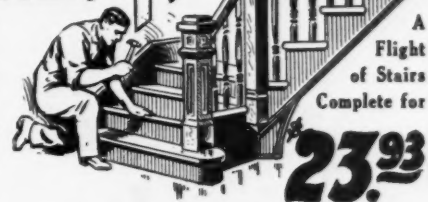
Our stock designs of Stair Newels, Rails, Balusters, Steps, Risers, Face and Wall Stringers and miscellaneous materials in Oak and Yellow Pine is very complete. A line which is at once adapted to the swell and modest cottage or most elaborate home.

Correct in Every Detail

We call particular attention to the style of construction, for instance, of our posts; the correct size of all mouldings, in order that the assembled effect may be harmonious and complete. Likewise, the turning of the balusters and shape of rails are especially adaptable for these specific purposes.



A Gordon-Van Tine Stairway



A
Flight
of Stairs
Complete for

23.93

List of Material Required for Stairs Shown Above

E349	14 feet Face Stringer.. Yellow Pine @ \$0.06 1/4	\$0.91
E731	10 feet Wall Stringer.. " " .05	.95
E8421	7 feet Base..... " " 2.80	.20
E725	18 ft. Wall Stringer, Ext. " " 01 1/2	.27
E8420	26 feet Base Moulding. " " .82	.21
E347	13 Steps..... " " .40	5.20
E961	2 Landing Steps..... " " .15	.30
E726	1 Round End Step.... " " 2.90	2.90
E727	14 feet Return Nosing. " " .02	.28
E348	15 Risers..... " " .20	3.00
E8060	75 feet Scotia..... " " .30	.23
E336	1 Newel..... " " 2.57	2.57
E341	2 Angle Newels..... " " 1.60	3.20
E343	14 feet Rail..... " " .11	1.54
E962	12 feet Fillet..... " " 1.00	.12
E345	11 Balusters, 28-inch.. " " .08 1/2	.94
E345	13 Balusters, 32-inch.. " " .08 1/2	1.11

Total Cost..... \$23.93
Dealers' Prices..... 90.00

Saving to You..... \$66.07

This Saving of \$66.07 Should Appeal to You

You get a high standard of workmanship, superior qualities of lumber, choice designs, prompt shipments and **guaranteed safe delivery**. You get low freight rates and quick delivery. These are facts, and should appeal to you at once. Send us your order for Stairs today.

YOU WILL BE SATISFIED AND SAVE \$66.00 OR MORE

With the styles illustrated, an infinite variety of arrangements of stairs is permissible, and it is a very rare exception when special work will be required for any particular purpose. Our designs are modern and up-to-date. All Newels are hand smoothed and made from thoroughly kiln-dried stock. All carvings are handmade and not composition ornaments. Every Newel from one-inch lumber, with glued lock joint. Height of all starting Newels 4 feet, with 8 x 8 base and 6 x 6 shaft, suitable for open or closed stringboard. Base of post, 20 inches long, allowing one or two risers. Every Newel wrapped in paper and carefully packed. The stock is all thoroughly machined, well kiln-dried and can be shipped promptly.

Buy Building Material From Us at Wholesale Prices

Write for the Gordon-Van Tine Catalog of Millwork, Sash, Doors, Lumber and Builders' Hardware. We Save our Customers a Million Dollars a Year. Many of the most successful Contractors and Builders in the United States buy from us exclusively. We guarantee quality, satisfaction and safe delivery. Give us a trial order. Get our latest Catalog. The prices speak for themselves.

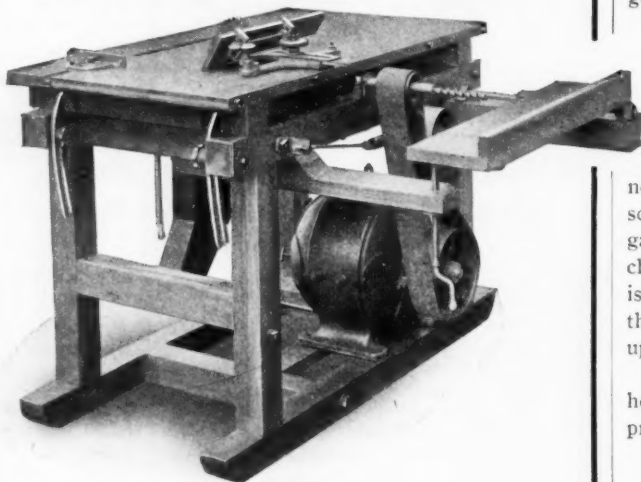
**GORDON-VAN TINE CO., 584 Federal Street
DAVENPORT, IOWA**

(129)

We have been in the Building Material Business since 1865

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

The "AMERICAN" PORTABLE SAW BENCH IS A CONTINUOUS MONEY-MAKER



Some machine tools do good work—make money—at the outset. But they haven't the staying power which means permanent profit-paying capacity.

The "American" Portable Saw Bench isn't in this class at all. It is an "always-on-the-job" machine, ready for work at any time and doing good work all the time, year in and year out.

This peculiar distinction of the "American" Bench is the natural result of the care applied to its design and construction.

The best materials and plenty of them; strong, rigid frames; ample bearings; sturdy adjustments; ready manipulation; quick changes for various duties;—these are exclusive "American" features giving exclusively "American" results.

When you have finished one job with an "American" Bench, your machine is ready for another job. It asks no "lay-offs" after a spell of hard work.

An "American" Bench is a continuous money-maker.

AMERICAN SAW MILL MACHINERY CO.

82 Main Street
HACKETTSTOWN,
NEW JERSEY

1655 Hudson Terminal
NEW YORK CITY
NEW YORK

Hartman-Sanders Company, 2155-2157 Ellston avenue, Chicago.

Quite a field is opened to contractors and carpenters to make money by recommending these columns and erecting the pergolas.

The Hartman-Sanders Company is well known, having perhaps the largest factory in the Middle West devoted to such work. They are the sole manufacturers of the well-known Koll's Patent Lock Joint columns. They have now taken up the pergola proposition and are ready to hand out authoritative and helpful information concerning this kind of work.

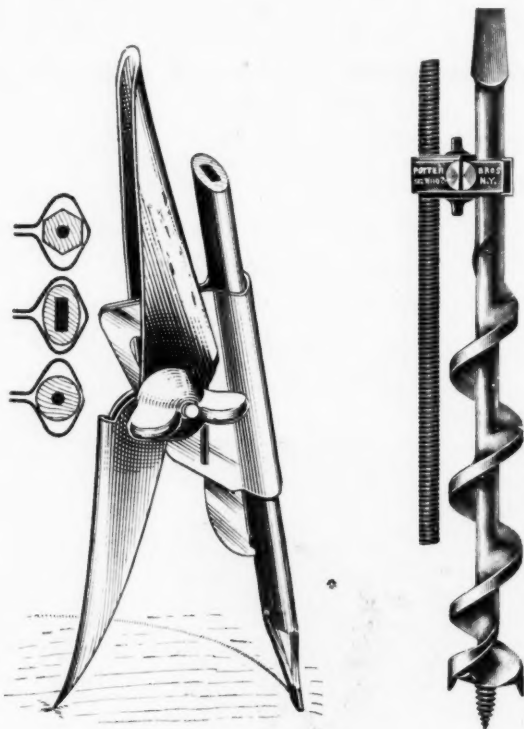
A new and complete catalogue of pergolas, very attractively gotten out, will be sent to all interested parties on request.

It is worth writing for.

Peerless Bit Gauge and Scriber

The illustrations show the Peerless Flexible bit gauge and the Peerless Scriber, both made by Potter Bros., 612 W. 110th street, New York. The gauge can be used in connection with the various sizes of auger bits, the single thumb screw holding the gauge securely in position and accurately gauging a hole of any depth to within $\frac{1}{4}$ in. of the brace chuck. The gauge proper is made of spring steel wire and is flexible, there being twenty turns to the inch, and from the nature of its construction will not mark the wood, slip upwards or interfere with the chips.

The scriber is made of sheet steel and will accommodate hexagon, oval or round pencils. There is a broad point to prevent scratching plaster walls, fine woodwork, etc., which



Peerless Scriber and Bit Gauge

is used also as a protector to the pencil point. It can be moved out of the way as desired. The sharp point is for compass work and for entering into quirks, mouldings, and similar places in scribing.

Potter Bros. will be glad to furnish the bit gauge or the scriber direct. Dealers desiring larger quantities are referred to Sargent & Co., New York.

Put It At Work In Your Shop



*"Handy as a Pocket
in a Shirt"*

Patented in the United States, Canada and other foreign countries. Other patents applied for.

*The "Multimotor" Shop Engine increases your profits and keeps down the size of your pay-roll. Does the work of three men at an expense of **less than a cent an hour.***

Stop pedal-pushing and crank-turning! Let the

Fuller & Johnson "Multimotor" Shop Engine

turn the wheels in *your* shop. This wonderful engine is small in size but a giant in power. Runs all hand-power or foot-power machines—jig saws, lathes, emery wheel, grindstone, drills, etc. Just the thing for carpenters, contractors and owners of small workshops.

Perfectly Simple Absolutely Safe

Simplest, neatest, strongest, most reliable little engine ever built. Comes to you **complete**—nothing to add but gasoline.

Easily moved anywhere. For **indoor** use has **out-door** fuel tank, insuring perfect safety.

Important working parts protected by dust-proof case. Needs no attention while running. Works steadily all day on a few cents' worth of grocery-store gasoline. It is air-cooled, fool-proof, cannot freeze or overheat.

The "Multimotor" in design, material and construction equals the best automobile engines. Every engine is thoroughly tested before leaving the factory, and is **guaranteed!**

Fuller & Johnson Farm Pump Engine

Practically the same as "Multimotor," with pumping gears added. Can be hooked up to any pump in 15 minutes. Needs no belts, arms, jacks or special platform. Pumps 400 to 1,500 gallons every hour. Perfectly adapted to farm and suburban use.

Engine Book Sent Free!

Book, giving full information about "Multimotor" and Farm Pump Engine, sent **FREE** on request. Let us tell you more about these amazing little power-producers. Let us send you the name of the nearest dealer, who will show you the engine and **explain** what it can do. (264)

If interested in larger engines, ask for Catalog of Fuller & Johnson's Famous Double-Efficiency Engines.



Fuller & Johnson

"MULTIMOTOR"

Works Like Ten Men

FULLER & JOHNSON MFG. CO. 7 Ames Street (Established 1840) **Madison, Wis., U. S. A.**

New Hy-Rib Handbook

Under this appropriate heading, the Trussed Concrete Steel Company, Detroit, Mich., are sending out the sixth edition of their Hy-Rib handbook, showing the value of this fabric in all parts of buildings of various characters and particularly for use in the construction of silos, tanks and conduits.

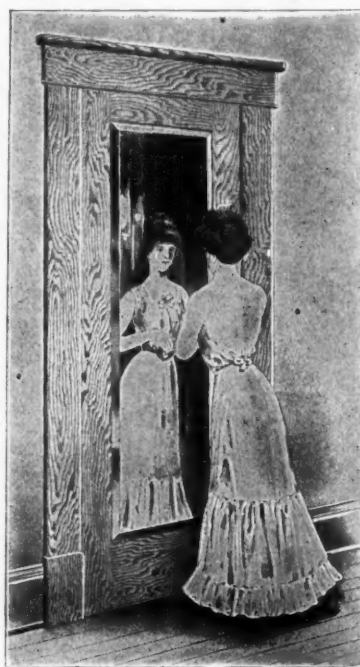
For the convenience of the reader, the book is subdivided into various sections, such as that for General Data on Hy-Rib, Applications to Floors and Roofs, to Walls and Sidings, Partitions, Ceiling and Furrings, Building Construction in General, Special Tools and Clips for Hy-Rib, etc. The detailed working drawings show exactly how the material is applied to building work. Illustrations are made from photographs showing the use of the material in construction.

Only those directly connected with the building trades have a conception of the manifold uses to which concrete, and especially re-enforced concrete, is being adapted. Not only in massive foundation work to support heavy structures, but in the walls and partitions as well. The danger from fire, as well as natural deterioration and decay, is causing engineers and architects to adopt it more and more in places where it is necessary to balance the naturally great compressive strength of the concrete by adding metal re-enforcement. Such places as walls, partitions could be built of solid concrete, but in order to be stiff enough would have to be very thick and bulky. The addition of re-enforcement allows a much thinner and lighter wall. In the proper design of structures where a thin wall or partition is desirable the engineer has a wide opportunity to display his ingenuity. To aid him this book is prepared.

Door with Mirror Panel

Frequently there is not room for a large pier glass without

inconvenience somewhere, and it is with the purpose of supplying this want without the inconvenience that the Huber Builders Material Company of Cincinnati, designed the door



Door with Pier Glass Panel

shown herewith. As will be seen, the door simply has a large plate glass mirror in place of the wood panels usually furnished.

It is possible that to some, the grain in the wood panes and rails is preferable, but in many places, space is an item and the mirror door will usually be given the preference. The appearance is often that of an enlarged room; while the usefulness of the mirror is apparent.

The door shown above is only one item from the 1911 catalog of the Huber Builders Material Company. This catalogue should be in the hands of every contractor and builder, as there are many bargains and novelties listed. This catalog is sent free by the Huber Builders Material Company, 45-49 Vine St., Cincinnati, Ohio.

"Burmite Quality Counts"

Ready-To-Lay

Burmite

(Rev. U. S. Pat. Off.)

In Preference to Other

FLEXIBLE-CEMENT-BURLAP INSERTED MATERIALS
For ROOFING and SIDING



MARQUETTE CLUB, Marquette, Michigan
Roofed with "BURMITE."

Residences, Business and Factory Buildings, Churches, School Houses, Summer Homes, Cottages, Bungalows, Garages, Barns and Farm Buildings of every description, Grand Stands, Amphitheatres, Elevators, Mills, Warehouses, etc., of **Frame, Brick, Concrete, or other construction—be they NEW or OLD.**

Because—

It is Artistic and Attractive in appearance; Durable and Inexpensive, Practical and Easily Applied, with perfect water-proofing qualities and great resistance to all destructive agencies, including FIRE.

Proven **THE BEST by TEST—The Highest Grade Material** for Roofing and Siding possessing **Strength, Beauty and Service.** Made in **TWO SURFACES, i. e.,**

BIRD-SAND and "Twolayr" SLATE-CHIPS (Patent Pending)

To meet severe weather conditions and the expansion and contraction due to the extremes of heat and cold. Sparks, Hail, Sleet nor Sliding Ice do not affect the weather-resisting and fire-retardative upper surface of "Burmite." It can be applied in cold or hot weather, and is equally well adapted to uneven, flat or steep surfaces. **LASTS LONGER THAN SHINGLES—costs less, lays smoother, looks nicer, and requires no paint to preserve it.** Eminently satisfactory for covering old or defective roofs of all kinds—**can be laid over old shingles or tin.**

GUARANTEED FOR 10 YEARS WITHOUT COATING.

The cost per year of service for buildings on which "Burmite" is applied, is much lower than for any other material, due to its long life, freedom from coating, and other maintenance cost. As a rule, other grades must be coated at least three times in from 7 to 10 years, the expense of which, added to the original cost of material, as compared to the total cost of "Burmite" for same time, will show a great saving in favor of the latter—besides the satisfaction of having the **BEAUTIFUL, ARTISTIC APPEARANCE.**

THE FIRST COST—THE ONLY COST.

Let us send you our Samples and Printed Literature: also, our Booklet, "BURMITE QUALITY COUNTS," illustrated with buildings, beautifully printed in colors, showing effect of "Burmite" applied as a Roofing and Siding on Residences, Summer Homes, Cottages, Bungalows, Garages, Barns, etc. Mailed free of all charges and obligation.

BERMINGHAM & SEAMAN CO., Roofing Mfrs., CHICAGO
Distributors of BEAVER BOARD. Gen. Offices: 1208-26 Tribune Bldg. Plant: 56th, Armitage & Grand Aves.
Chicago, Buffalo, Birmingham, Ala. Cincinnati, Dallas, Detroit and Grand Rapids, Mich. Kansas City, Memphis and Nashville, Tenn. Pittsburg, Portland, Ore., Richmond, Va. St. Louis. St. Paul, Minn.

Birmingham & Seaman Co., Tribune Bldg., Chicago
Mail to my address, as above, Sample and Booklet.
This places me under no obligation. A. C. & B.

Name

No. and St.

Town State



Minneapolis Places Its "O. K." on Underfeed Heating Systems

ARCHITECTS and Builders everywhere recognize that Underfeed Heating Systems ADD to the RENTING or SELLING value of any building. Behind every Underfeed Dealer is the overwhelming selling force of established reputation of a heating system that, without question, PAYS FOR ITSELF. Minneapolis is the latest city to put the unqualified stamp of official approval upon the Underfeed. MILLIONS of dollars are *wasted* every winter in *ordinary* heating plants. It has been successfully demonstrated that the Peck-Williamson Underfeed coal-burning way *does away* with smoke nuisance, converting smoke and gases into heat units. It is this *certain conservation* of *usual/tremendous coal waste* which is one great factor in the absolute certainty that

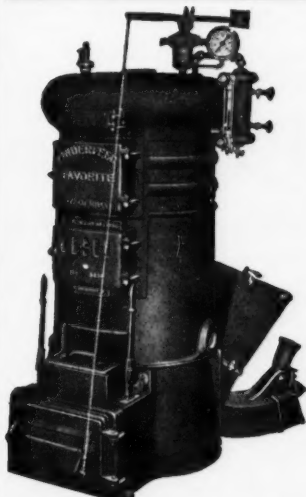
The Peck-Williamson Underfeed

HEATING SYSTEMS WARM AIR STEAM-HOT WATER
FURNACES-BOILERS

Save $\frac{1}{2}$ to $\frac{2}{3}$ of Coal Bills

Many municipalities have endorsed the Underfeed as best for health and economy. Minneapolis is one of them. The Field Houses at North Commons and Jackson Park are both heated with Underfeed hot water boilers. The home of Theodore Wirth, Superintendent of the Minneapolis Park Board, is heated by an Underfeed Steamboiler—(see illustrations above). CLEAN heat at LEAST cost is a Peck-Williamson Underfeed certainty. Cheapest slack or pea and buckwheat sizes of hard or soft coal—fuel that would smother ordinary heaters—will, in the Underfeed, yield as much clean, even heat as highest priced coal in other furnaces or boilers.

This illustration shows the Underfeed Boiler.



Underfeed heating systems are available for buildings of ALL kinds, large or small, churches, banks, apartment houses or residences.

The Ohio State Fair Buildings at Columbus are Peck-Williamson heated.

If you are going to build either for yourself or for investment, it will PAY you to install an Underfeed. When you specify a Peck-Williamson Underfeed, you are insuring **all-time** heating satisfaction at **least cost**, thus adding to your own reputation as a successful architect or builder.

Our Underfeed Booklet and Furnace Catalog and Heating Plans of our Engineering Corps are FREE.

Write TODAY for fac-simile testimonials.

Illustration shows furnace without casing, cut away to show how coal is forced up under fire, which burns on top.



THE PECK- WILLIAMSON CO., 436 West Fifth Street, Cincinnati, Ohio

Lorenzen to Open Central Display Room

It is announced that Chas. F. Lorenzen & Company, the well known Chicago manufacturers and dealers in consoles, tiles, fireplace fixtures, etc., are establishing a new down-town office and tile display room at 128 Reaper Block, corner Clark and Washington St., and expect to open it during the week of July 5th to the building public.

It is understood that in their centrally located office the Lorenzen Company will show an exceptionally large and attractive display of Rookwood Faience and complete lines of other well known makes of tile. We hope next month to be able to show photographs of this office and display room for the benefit of our readers. We feel sure that the building public will be glad to accept the invitation to visit this display room and study the artistic effects now obtainable in modern building by the use of artistic wood mantels and decorative tile.

Send for These

The Montross Metal Shingle Company, Camden, N. J., have had printed a set of five blotters in three colors, illustrating the different styles of shingles which they manufacture. These blotters are very artistic, and will be sent to you for the asking.

The Montross Metal Shingle Company is one of the most wide-awake concerns today manufacturing metal shingles. They are being kept busy filling the orders that are coming in for their goods.

The Montross Metal Shingle Company began the manufacture of metal shingles twenty-two years ago. During this time many letters have been received from architects and builders recommending their use. They are made of prime tin plates, and are fire, lightning and storm-proof. This in

itself is enough to recommend them for use. They are easily laid with nails and require no soldering. They are light and inexpensive, and with reasonable usage should last the lifetime of the building. These shingles have telescopic side locks, which allow for expansion and contracting of metal during the different seasons of the year.

In addition to these features of durability, special attention has been paid to the artistic makeup of the shingles. They are embossed in plain and neat designs and are a pleasing addition to any house.

The manufacturers of these shingles will be glad to send a copy of their catalogue, price list and special folders, which contain much valuable information, to every carpenter and builder who recognize the fact that the roof of any building is one of the most important features of its construction.

Apollo Sheets and the Acid Test

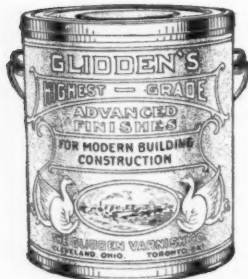
Contractors, builders, and all users of sheets will be interested in the announcement of the American Sheet and Tin Plate Company relative to the acid test for sheets which has been brought so prominently before the building trades.

The American Sheet and Tin Plate Company has always discredited the accelerated acid test as a measure of corrosion, in which attitude they have been supported by the majority of sheet manufacturers, as well as by practically all eminent metallurgists; and this attitude, we understand, they still maintain.

The use of this test has grown in the last few years, and notwithstanding the opinion of the large manufacturers and eminent metallurgists, is used to a great extent by railroad engineers, architects and others.

To meet this demand, the American Sheet and Tin Plate Company has developed a material possessing all the good

The Life of Every Building



—And not only the life but a large part of the upkeep cost depends on the protection that every surface affords. Carefully protected wood will outlast—many times—wood that is poorly protected or unprotected.

This is equally true of Stucco, Cement, Concrete and Metal. Glidden's Advanced Finishes offer the contractor and builder the most dependable protection ever devised for various structural surfaces. Every gallon is the result, not only of twenty years of manufacturing experience, but twenty years of constant experimenting and perfecting.

Glidden's Advanced Finishes

Glidden's Liquid Cement

In addition to offering a decorative finish in natural cement color and many permanent shades, Liquid Cement absolutely removes all blotches that so frequently appear on cement surfaces and renders the surfaces absolutely waterproof.

Glidden's Concrete Floor Dressing

offers a perfect protection for floors. It enters into the pores, becoming not a mere coating, but an integral part of the material. It is waterproof, and prevents the formation of cement dust. It is equally good for concrete or wood.

Glidden's Acid Proof Coating

absolutely solves the rust problem whether from damp or acid. Iron or steel cannot be restored after disintegration, but this coating will absolutely prevent it. It is invaluable for use on fine machines or other delicate surfaces.

Demonstrating Samples and Literature Free on Request

FACTORIES:
Cleveland, Ohio, Toronto, Can.

The Glidden Varnish Company

BRANCHES:
New York, Chicago

Know this label
and you know all
you need to know
about the quality
and value of varnish.

It can be your sole guide to
the purchase or recommendation
of varnish for any grade or char-
acter of work.

It is always the sign of honest
quality.

Berry Brothers' Architectural Varnishes

MEET ALL REQUIREMENTS FOR HIGH-
EST GRADE FINISHING IN BUILDINGS



For finishing floors in the most durable man-
ner possible. Its quality has made it the best-
known and most widely used of all varnishes.
There is no substitute.



For the finest rubbed (dull) or polished finish
on interior woodwork. It has for years been
the standard to which all other varnish makers
have worked.



For interior woodwork exposed to severe wear
and finished in full gloss, such as window sills
and sash, bathroom and kitchen woodwork, and
stands the action of soap and water to an un-
usual degree.



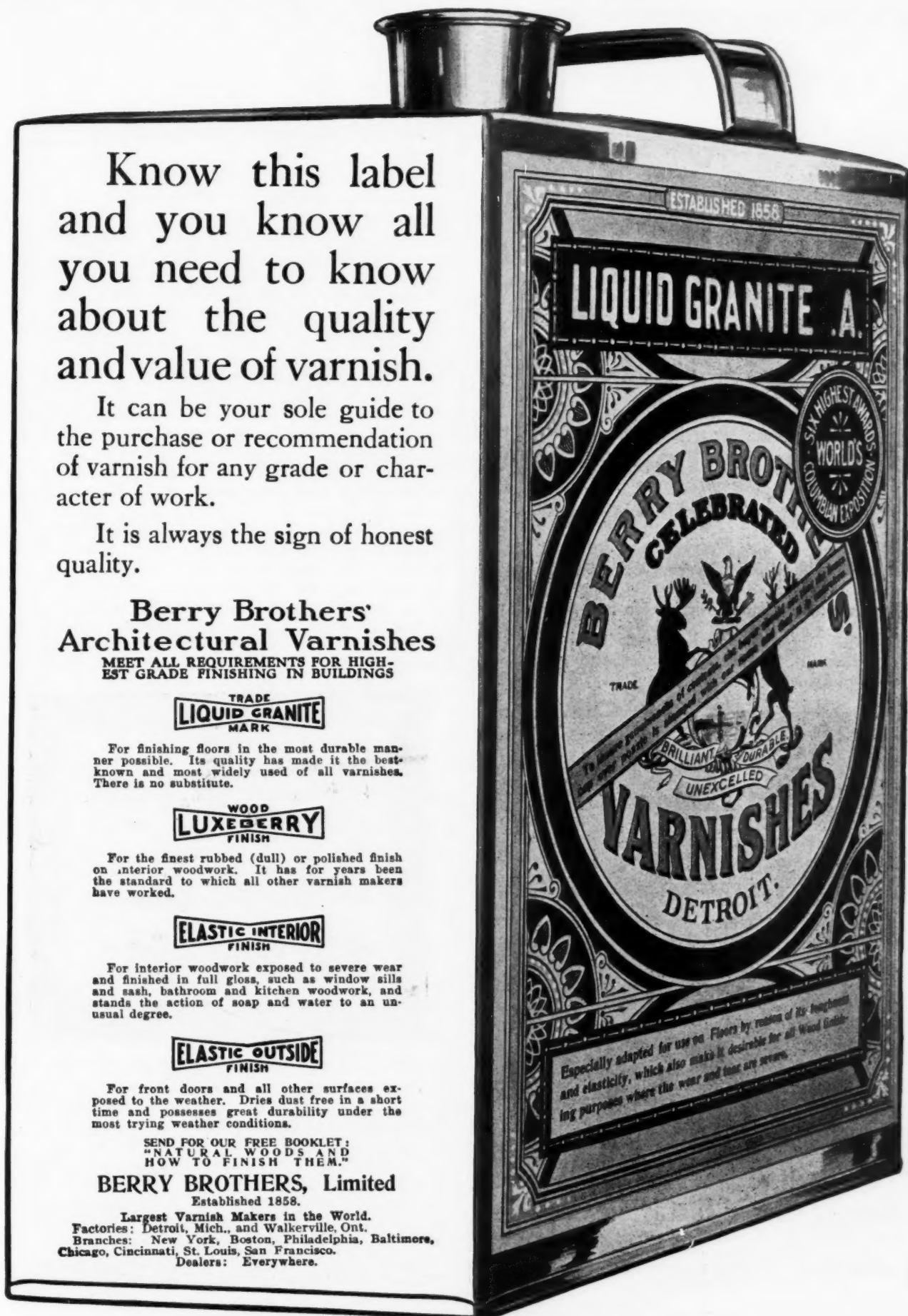
For front doors and all other surfaces ex-
posed to the weather. Dries dust free in a short
time and possesses great durability under the
most trying weather conditions.

SEND FOR OUR FREE BOOKLET:
"NATURAL WOODS AND
HOW TO FINISH THEM."

BERRY BROTHERS, Limited

Established 1858.

Largest Varnish Makers in the World.
Factories: Detroit, Mich., and Walkerville, Ont.
Branches: New York, Boston, Philadelphia, Baltimore,
Chicago, Cincinnati, St. Louis, San Francisco.
Dealers: Everywhere.





The Saw You Would Fight to Keep

OWN A SAW, ANYWAY.

The Expert Carpenter may have a half dozen Saws

The once-in-a-while handy man who likes to "fix things" about the place should own a good saw too.

The Contractor should have a set of Simonds Saws.

Simonds Saws Made of Simonds Steel

Ask your Hardware Dealer for a Simonds Saw. You run no risk whatever in buying this saw. We take all the risk because we know we have the right saw and can do it.

But you don't want a saw that's merely guaranteed, one that you aren't compelled to keep. You want a Saw you would fight to keep.

That puts the Simonds Saw in a class by itself. Once you buy and use it, you forget all about any guarantee. The saw is so good that you simply want to keep that Simonds Saw.

Simonds No. 84 (see trade-mark in illustration above) made of Simonds Steel, warranted, carved and polished apple handle, skew back, five brass screws in handle. Patented temper. Accurately ground. Hand, Rip, or Panel. If your Dealer will not sell you this saw we can send it direct from the factory. Send post-card for Dealer's name and price of saw you want. Give length, point, and whether straight or skew back.

Simonds Manufacturing Company

Fitchburg, Mass.
New York City
Portland, Ore.
Vancouver, B. C.

Chicago, Ill.
New Orleans, La.
San Francisco, Cal.
Lockport, N. Y.

Montreal, Que.
Seattle, Wash.
London, Eng.
St. John, N. B.

qualities of their world's famous Apollo Best Bloom, at the same time giving it the added qualification of fully meeting the accelerated acid test; or, more plainly speaking, being less soluble in acid than any iron or steel sheets heretofore placed on the market.

The accelerated acid test is presumed by many to be a direct measure of corrosion. In reality it is simply a measure of solubility of metals in sulphuric acid of a stipulated degree of strength; and it has been the contention of this company that no relationship existed between this test and corrosion under normal or atmospheric conditions.

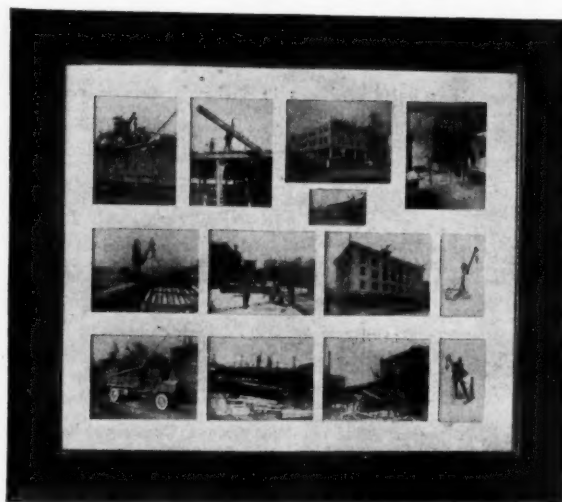
This acid test has been associated in the minds of many, and apparently carried with it the idea of exceptional purity; the usual metalloids being considered in this connection as impurities. We have no thought to discuss such technical features; but the fact that this material carries with it all the good features of Apollo Best Bloom should be sufficient recommendation of its efficiency to the discriminating purchaser.

Taylor Portable Steel Derricks

The favorable attention of contractors and builders is called to the Taylor portable steel derricks, manufactured by John L. Taylor, 1034 W. Lake St., Chicago. This is a handy, all-around derrick, hand operated. Some of its many uses are shown in the accompanying illustration, which is a reproduction of a large framed group of pictures showing the derrick in use.

The Taylor portable steel derrick is strongly constructed of malleable iron and steel. Its total weight is from 160 to 170 pounds, and since the derrick is in two sections, the base section weighing about 90 pounds, it is seen that this is truly a portable derrick. One man can easily lift and carry either of these sections and can assemble the derrick alone.

The beam swings in a complete circle, having a reach of from 3 to 3½ feet. The height of the block above the floor is



Photographs Showing Use of Taylor Portable Steel Derricks

4 or 5½ feet in the two sizes of this derrick. The winding drum has a capacity of 350 feet of quarter-inch cable. The drum is revolved by operating cranks and is so positioned that one man can reach both cranks, so that he can push with one hand and pull with the other; which is much faster and easier than operating a single crank. One-man capacity on this derrick is 300 pounds, 70 feet per minute; 600 pounds, 35 feet per minute or 900 pounds, 25 feet per minute, depending on how the pulleys are arranged.

Builders should investigate these handy, labor-saving derricks and should write to John L. Taylor, Chicago, for complete information concerning them.

This 165-page book should be in every carpenter's tool chest

IT contains a complete catalog of 200 mechanics' hand-tools, the largest line offered by any one manufacturer, and 35 pages of handy reference tables and useful information.

It is important to know the factory where your tools are made, for otherwise you have no one to hold finally responsible for the quality.

The MARK of the MAKER tells you

- 1 That the tool has been made by us and has over 90 years of supremacy in tool-making back of it.
- 2 That it is guaranteed perfect in quality and workmanship, and is the best tool made for the work it has to do.
- 3 That we assume the full responsibility.

Our four large lines of Guaranteed Hand Tools for Carpenters, Electricians, Machinists, and Tinsmiths, are sold by practically all leading dealers in the United States and Canada, or can be ordered by them from any hardware jobber. Insist on The MARK of the MAKER and accept no substitute.



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The Peck, Stow & Wilcox Co.

MF'RS of the Largest Line of Mechanics' Hand Tools offered by any Maker

Address all Correspondence to
22 Murray St., New York City

Established 1819

Five Large Factories



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

Base Ball Scorer

The Crescent Machine Co., Leetonia, Ohio, have sent us a very welcome and acceptable little souvenir, a baseball scorer, accompanied by this letter: "If there is a baseball fan in your office pass this along to him. Should you, by chance, have more than one around the place, tell us who they are and we will supply the demand."

"By the way, as long as they last, these scorers will be mailed to any one interested in wood working machinery."

"Very truly yours,

"THE CRESCENT MACHINE CO."

A word to the wise is sufficient.

New Combination Woodworker for Contractors and Builders

The Tannewitz Works, Grand Rapids, Mich., are just placing upon the market a new combination woodworker especially designed for contractors and builders to do their own mill work and save themselves money.

This machine is three separate and distinct machines in one, each one of which is of great importance and utility; namely, a saw bench, a jointer and a boring and mortising machine. These three machines are combined into one so that each one can be operated without setting up, as is necessary with most other similar machines.

Practically all kinds of work can be done on this combination machine; for example, ripping, cross-cutting, jointing, planing, mortising, beveling, dadoing, moulding, boring, mitering and numerous other operations.

The machine is made with a heavy castiron frame. It is equipped with all gauges, two 10-inch saw blades, two 8-inch

jointer knives, five bits in sizes $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{3}{4}$ inch; and the equipment also includes belting, wrenches, etc.

When not furnished with motor the countershaft is contained in the machine. If desired the Tannewitz Works can furnish the celebrated "Olds" horizontal gasoline engine with this combination woodworker, the two being mounted separately on heavy skids and very easily portable.

They have an absolute guarantee that these machines are just as represented. Carpenters and contractors should investigate at once, writing the Tannewitz Works, Grand Rapids, Mich., for complete information.

The Boss Floor Scrapers

Mr. George J. Kepplinger, Dwight, Ill., has been working constantly for more than ten years manufacturing floor scraping machines. During that time he has constantly improved them, since his aim has been to produce a machine of greatest simplicity, adaptability and usefulness at the lowest possible price. He states that he has produced many machines of great mechanical ingenuity and worth, but never came up to his own ideal as to what a floor scraper should be until he perfected his latest models—the Boss Double Swivel and the Boss Junior floor scrapers.

One of the greatest improvements in Mr. Kepplinger's machines is the regulating gauge which he has devised. This does a very important work in adjusting and setting the floor scraper to take only so much and no more, when planing the floor. You can set the machine so that it will take just the thickness or thinness of shaving that you desire. Knots or no knots, against the grain or with the grain, on hard or soft wood, new or old flooring, the result is claimed to be always the same—an even floor.

The secret for this lies in the gauge. Other important



By right of
superior merit
the logical
successor
of Wood and
Metal Lath.

Modern Builders Use

Sackett Plaster Board INSTEAD OF LATH

Sackett Plaster Board combines lathing and fire-proofing in one inexpensive commodity. It speeds construction taking very little time to apply. Saves labor and material in plastering. Reduces fixed charges for fuel.

Acts as a fire retardent and sound deadener—keeps out the heat in summer and the cold in winter, making it possible to maintain a normal temperature—makes the interior of the building more sanitary, more healthful.

Sackett Plaster Board does not contract or expand, warp or buckle—avoids unsightly plaster cracks and lath stains.

The cost of **Sackett** Plaster Board is within easy reach of every builder—its value in any building is worth many times its cost—its use means perfect walls and ceilings, unequalled in

Quality, Comfort and Durability.

A complete specification covering the use of **Sackett Plaster Board** and plastering thereon, and any additional information desired, will be mailed promptly to any one interested on request to our nearest office. This specification contains information of vital interest to every builder, contractor and plasterer. Send for it.

Ask for Booklet A.

Sackett Plaster Board is Manufactured Exclusively by

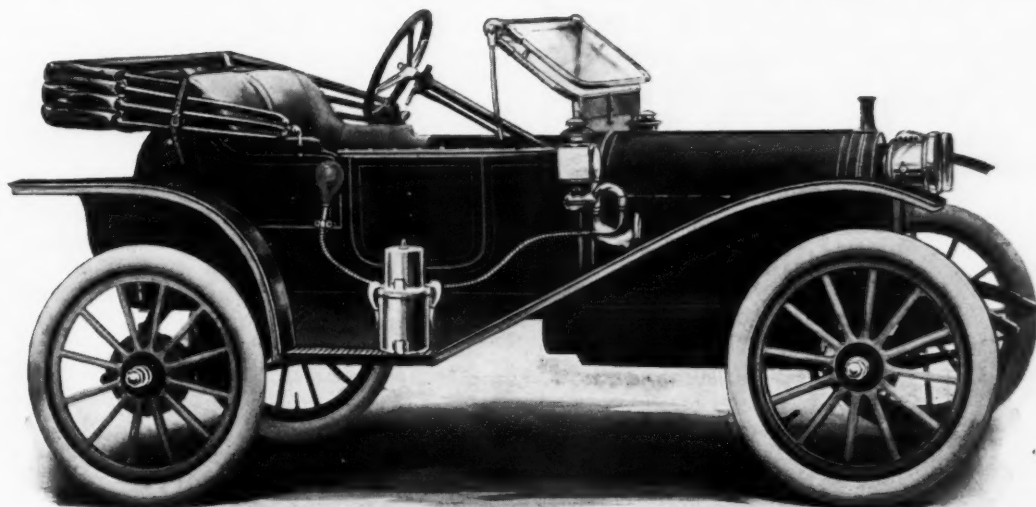
UNITED STATES GYPSUM COMPANY

The World's Leading Producers of Modern Wall Plasters and
Gypsum Fireproof Products

New York Cleveland Chicago Minneapolis Kansas City San Francisco



For 1912--- Complete equipment included



**Runabout
Fully Equipped**

Hupmobile

GUARANTEED FOR LIFE

\$750

F. O. B. DETROIT

A car which possesses, in common with the costliest cars of largest size, that smartness and perfection of form which, in a man, denotes good breeding.

A car which avoids the scant proportions which so often characterizes cars of medium carrying capacity.

A car which seats its occupants with more luxury and ease and "leg room" than any other of its type and class—and which speeds smoothly away at the touch of one lever and two pedals.

A car which appeals alike to the masculine and feminine members of the family because it so completely satisfies the practical demands of the one; and the artistic tastes of the other.

The Hupmobile for 1912 is sold completely equipped.

Thus, \$750 buys a Runabout fitted with doors, top, windshield, gas lamps and generator, oil lamps for the dash and rear, a complete set of tools, and horn; \$900 includes similar equipment on the Touring Car, etc.

In addition, we have incorporated improvements which represent \$100 more in material alone than in preceding models.

The more important of these improvements include Vanadium steel springs; Timken bearings back of driving pinion; rear wheels keyed onto tapered

axle shaft; ten-inch instead of eight-inch brakes; Timken roller bearings on front wheels; new pressed steel, brass-lined radiator, with efficiency increased one-third; nine-inch instead of six-inch mud guards; oilers on all spring hangers; Hyatt roller bearings in differential; improved carburetor that will not leak and is easily and accurately adjusted; four instead of two pinions on the differential.

From the first the Hupmobile presented excess value, which you can readily see is greatly increased in the 1912 cars by reason of the added equipment and improvements.

HUPP MOTOR CAR COMPANY,

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Write Us Now For Free Samples of Johnson's Artistic Wood Finishes



Johnson's Prepared Wax

is a complete finish for all hard and soft wood—equally well adapted for use on floors, wood-work and furniture. May be used on the bare wood or over Dye, Paste Wood Filler or any finish—simply apply with a cloth and bring to a polish with a dry cloth or brush.

Johnson's Prepared Wax gives that beautiful, artistic, dull finish so much in demand. Prepared Wax does not show scratches and heel marks, and work finished with it may be easily kept in perfect condition.

Johnson's Prepared Wax contains a larger percentage of hard, expensive wax than other wax finishes on the market, and for this reason it covers a larger surface and can be brought to a more beautiful and lasting polish. It does not become soft and tacky in warm weather or warm climates—or from the heat of the body.

Ask your dealer for free Sample

Johnson's Crack Filler

is a paste filler for cracks, crevices and nail holes. Should be applied the same as putty, but it is much superior to that article as it does not chip, crack or come out of place. When Johnson's Crack Filler has hardened, it takes Johnson's Wood Dye the same as the wood.

Ask your dealer for free sample of Johnson's Crack Filler and test it out.

If your dealer cannot supply you, write us. We will send samples, also Instruction Book Edition A. C. B. 7, all free when requested.



S. C. Johnson & Son, Racine, Wis.

"The Wood Finishing Authorities."

features, such as sanding attachment, ball swivel joint, knife protector, etc., deserve special attention.

All those who are interested should write at once to Mr. Kepplinger, at Dwight, Ill., who will send full information concerning these floor scrapers.

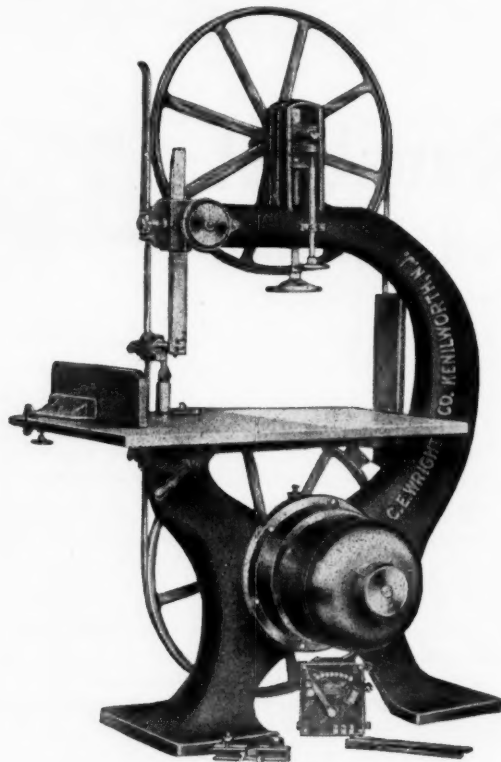
New 1911 Model Band Scroll Saw

The accompanying illustration shows the 36-inch pattern of the Charles E. Wright Company's 1911 model band scroll saw. This machine is very heavy and substantially made and specially designed for high grade band-saw work, for pattern shops, furniture factories or where a first-class tool is desired. This machine embodies all of our latest improvements.

The frame is massive, being cast in one piece, cored hollow to avoid any possibility of vibration. The manufacturers can refer you to customers using these machines for years without the breakage of a single saw.

The table is 36 by 30 inches square, and tilts to an angle of 45 degrees, made of hardwood or iron, finished perfectly true, the front edge being planed to receive a hand slitting gauge, which is furnished with each machine. Improved hand leverage is used for locking table into position without the use of a wrench.

The wheels are 36 inches diameter, by 2-inch face; either iron or wood rims are furnished. These wheels are turned perfect and true, ground to a gauge and fitted with pure, endless rubber band tires. So perfect is this process of put-



Chas. E. Wright Co.'s., New 1911 Model 36-Inch Band Scroll Saw

ting on these bands that they ensure against their ever coming off until practically worn out, if properly handled. All bearings are self-oiling and dust-proof. The journals are extra long and lined with the best babbitt metal.

The tension is their improved weighing tension, which is always elastic and will show at a glance just the strain necessary to secure the best results, thus greatly lessening the liability of saws breaking by careless or inexperienced operators. Patent non-friction guides are furnished above and below the table without extra charge.

These improvements are claimed to be an advance over

The Keenest Edge
in Shortest Time, on
Any Tool, With No
Danger of Draw-
ing Temper.



6 MONTHS

Hand
and
Foot
Power



FREE TRIAL ELEVEN TOOLS IN ONE

1. Coarse Grinder
2. Fine Grinder
3. Chisel Attachment
4. Drill Attachment
5. Polishing Shaft
6. Buffing Wheel

We want every shop,
factory, and tool-user to
prove by 6 months' Free
Trial, on your own tools,
how this grinder saves

7. Polishing Wheel
8. Carborundum Hone
9. Pocket Hone
10. Scythe Stone
11. Foot Power Attachment.

25 Times
Faster Than
Grindstones
6 Times Faster
Than Emery
Hand and
Foot Power

time and money, makes work easier, saves and makes money.
We will send this Mechanics Special on 6 months' Free Trial,
and then, if you wish, send it back at our expense.

Luther Diamond Tool Grinder

Genuine Carborundum Wheels will not Draw Temper

The genuine Carborundum Wheels on this grinder cut hardest steel, as emery does soft copper, and does not draw temper—no water cooling necessary. You can do work in two minutes on this grinder that would take a half hour on the grindstone. With this grinder it is quick and easy work to keep tools bright and keen-edged, which means faster, easier general work.

BUILT LIKE A HIGH GRADE LATHE

Special tool holders make it possible for any one to do difficult grinding, such as twist drills, chisels, etc. 2500 revolutions per minute—steel and malleable construction, enclosed gears, dust proof, bronze bearings, machine cut spur gears run in oil bath.

WHAT USERS SAY

Thirty Times Faster than Grindstone

We have received your special tool grinder with foot-power attachment and sharpening outfit. We have tried your grinder and our machinist is very much pleased with it and tells us that he ground a chisel on this tool grinder in two minutes, which would have taken an hour of his time on any other grinder.
—THE SEARS & NICHOLS CO., Pentwater, Mich.

ELMWOOD HAYNES, Pres. of Haynes Automobile Co., says: "I have found the Mechanics Special a most excellent device."

Thousands of users say the same.

Luther Grinder Mfg. Co.
16 Madison St., MILWAUKEE, WIS.

RETURN THIS COUPON FOR SIX MONTHS' FREE TRIAL OFFER

Return this coupon for 6 months' Free Trial Offer—a whole half year of free test. Let us give you full description of the Mechanics Special—full particulars of our liberal offer, and also the wonderful story of the discovery of Carborundum, as it appeared in McClure's Magazine. Returning the coupon puts you under no obligations. It is well worth your while to find out all about the grinder guaranteed for 5 years—that will outlast any number of emery wheels—save tools and make work easier. Return the coupon today.

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Address.....

Dealer's Name.....

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FREE COUPON

LUTHER GRINDER MFG. CO.

16 Madison St., Milwaukee, Wis.

Please send me free and prepaid your Carborundum booklet and Six Months' Free Trial Offer on Mechanics Special Luther Diamond Tool Grinder. This obligates me in no way whatsoever.

CONCRETE MACHINERY

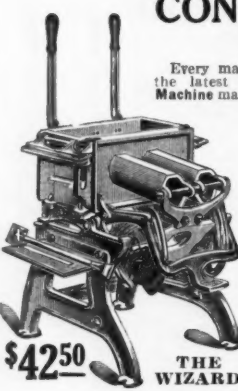
At Record Breaking Prices.

Every machine in our large line of concrete machinery embodies the latest improved mechanical features. Our **WIZARD Block Machine** makes more blocks in less time than any other on the market.

Concrete block making as a side line offers big money making opportunities for the contractor and carpenter. Hundreds of builders are engaging in it.

The illustration shows one of our Wizard Cement Block Machines, made in two models. Its equal in point of construction and capacity cannot be bought elsewhere for less than \$60.00. Our low price of \$42.50 for this up to date machine, with complete outfit of face plates, pallets and attachments for molding all kinds of blocks, sets a new record. Our line is complete and includes other machines at \$13.95 up.

Our Special Concrete Machinery Catalog quotes the lowest prices ever made on concrete building block machines, silo block machines, sill and cap molds, concrete brick machines, molds for concrete porch material, such as ornamental columns, piers, rails, balusters, etc.; molds for well curbing, sewer and drain tile, fence posts, etc., and concrete mixers. Be sure to get this catalog. Just ask for our Concrete Machinery Catalog.



\$42.50 THE WIZARD

NO BETTER TOOLS MADE.

WHY PAY MORE?



Fulton Special Hand Made Saw, 26-Inch. Price, \$1.25



Fulton Jack Plane, 15-Inch. Price, .95c



Take Down Square, new pattern, blued finish, with carrying case. Price, \$2.00

MILL WORK AT FACTORY



Yellow Pine Cap Molding. Price, per 100 feet... **\$1.90**

Head Casing. Price, per 100 feet... **\$1.75**

Fillet. Price, per 100 feet... **35c**

Starting Newels.
Plain Sawed Red Oak, 4 feet high, 5 inches square. Price... **\$2.21**
Yellow Pine. Price... **1.98**
Craftsman Oak Stair Rail, 2 1/4 x 3 1/4 inches. Price, per lineal foot... **14c**

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Yellow Pine 1/4 - Round Molding, 3/4 x 3/4 inches. Price, per 100 feet... **30c**

Oak Thresholds. Price, each... **5c**

Yellow Pine Casing, 4 1/4 inches wide. Price, per 100 feet... **\$1.65**

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The values shown on this page are not specials or leaders, but are picked at random from our big Building Material and Mill Work Catalog.

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You'll never get rich, you'll never make the profits other contractors are making, until you stop paying bonuses to needless middlemen for your supplies.

A trip through Europe, or a new automobile, costs less than the amount we can save you on the material required for a single \$5,000.00 house.

No local dealer or agent can furnish mill work as fresh, clean and sound, and of such uniform high quality, as we **guarantee** to ship on your orders.

A \$500,000.00 stock of mill work, a splendid organization of skilled woodworkers, packers and loaders, a perfectly equipped factory with its modern machinery, and long experience in making quick shipments to every state in the Union, insure you prompt and safe delivery of your order, whether large or small.

Clip the Coupon Above and

YOU CAN MAKE \$100.00 EXTRA

THIS IS OUR WHOLESALE LUMBER PRICE LIST

We Publish Special Lumber Price Lists Quoting "Delivered Prices" to Every City in the United States.

Let Us Send You a List Showing Our Delivered Prices (Freight Prepaid) to Your Station. Mailed Free on Request.

If you cannot wait for our delivered Lumber Price List, SEND US YOUR LIST; we will gladly send you our list quoting you our prices on your entire bill of lumber or mill work. The prices, however, will be exactly the same as the prices printed in our wholesale price list.

You can increase your profits \$100.00 on every job you contract for that requires enough lumber to make a small carload by buying from us. The lowest wholesale price is our price to you for lumber manufactured by us in our own mill adjacent to the finest timber lands in the country.

If bigger profits mean anything to you, send this minute for a copy of our **Wholesale Delivered Lumber Price List**, showing prices on our choice lumber delivered at your station. One small profit is all we add to the manufacturing cost. We guarantee the quality of every board we sell. We ask you to let us return your money, including the freight charges, if the goods fail to please you in every respect.

QUALITY GUARANTEED

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FAMOUS FULTON TOOLS.
HIGHEST STANDARD.



Fulton Hatchet, Size 2.
Price.....67c

Fulton Improved Hatchet Brace, 10-Inch.
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Fulton Square Shank Screwdriver, 6-inch.
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Price.....27c

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Price.....34c

For complete range of sizes and prices of our tremendous stock of high grade carpenters' tools and builders' hardware, send for our Special Hardware Catalog.

HERE IT IS! MAIL IT NOW.

☐ Wholesale Delivered Lumber Price List.
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☐ Roofing Catalog.
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Sears, Roebuck and Co., Chicago, Ill.

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COST PLUS ONLY ONE PROFIT

Largest Mill Work Plant in the Contractors and Builders

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FOR YOURSELF THE BENEFITS OF OUR PLAN.

The value to the builder, from an advertising standpoint, of a good job well done cannot be overestimated. One or more houses built with our mill work will spread your fame far and wide.

Hundreds of successful contractors have made us a silent partner in their business. We have increased the demand for their services and swelled their profits. Let us do the same for you.

Send us a trial order for flooring, doors, windows, shutters, porch material, stairs, any kind of interior or exterior trim or mill work. It will be carefully selected, double inspected, packed by experts, and shipped to you promptly under a plain shipping tag, making it impossible for anyone to tell by whom the goods were shipped.

Send for the Catalogs You Desire



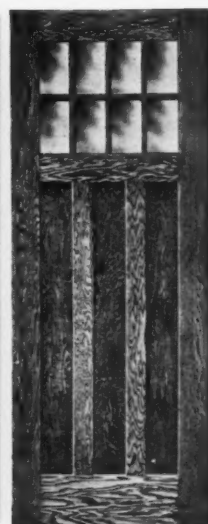
Outside Window Frame, 2 feet by 4 feet 6 inches, with pulleys. Price.....\$1.40

Two-Light Check Rail Window, 2 feet by 4 feet 6 inches, complete with glass. Price.....82c

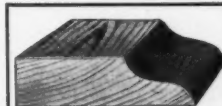
Our line of sizes is complete.



Birch Interior Door, 2 feet 8 inches by 7 feet, 1 ¾ inches thick. Price.....\$3.46



Craftsman Oak Front Door, glazed plain plate glass, 3x7 feet, 1 ¾ inches thick. Price.....\$8.25



Yellow Pine Window Stop, ¾x1 ½ inches. Price, per 100 feet.....33c

A Few Flooring Figures.

We quote our price per 1,000 feet on ¾x2 ¼-inch face only. See our Mill Work Catalog for complete range of sizes and grades.

Quarter Sawed Oak Flooring, clear.	Price.....	\$86.30
Plain Sawed Oak Flooring, clear.	Price.....	\$9.50
Maple Flooring, clear.	Price.....	\$9.00
Royal Acme Gum Flooring, clear.	Price.....	\$4.80
Cypress Flooring.	Price.....	\$4.00
Yellow Pine Flooring, B and better, ¾x3 ¼-inch face.	Price.....	\$28.75

THIS BUNGALOW COMPLETE for \$716⁰⁰

For \$716.00 we will furnish all the material to build this Craftsman Design Five-Room Bungalow, consisting of mill work, flooring, ceiling, siding, finishing lumber, building paper, pipe, gutter, sash weights, hardware, mantel, painting material, lumber, lath and shingles. By allowing a fair price for labor this up to date home can be built for \$1,630.00.

Note the open air sleeping porch, 8 feet 6 inches by 11 feet 9 inches. Specifications include Craftsman design oak doors and highest grade finish throughout. Send for our Book of Modern Homes showing plans of this and 100 other up to date residences;

THE BOOK OF MODERN HOMES

prepared by our own corps of skilled licensed architects, experts who are familiar with the conditions, climatic and otherwise, in your section of the country and know exactly the best type of house adapted to the needs of your clients.

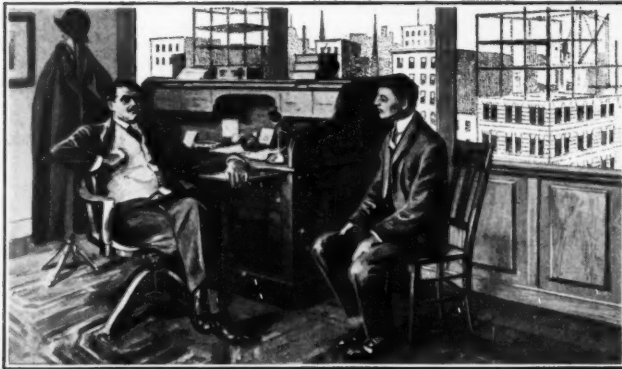
Our service avoids all the annoyances, delays and difficulties that go to make the contractor's life a burden when he orders his supplies from a hundred sources. Put your problems up to us and let us take care of them for you.



CO., CHICAGO, ILLINOIS



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



How Much Salary Are You Worth?

What can you do that any one of a million others could not do just as well? How much result-increasing or expense-decreasing knowledge can you bring to bear in your work? Have you any special ability? Is there any reason why an employer should single you out for more than average pay? Or are you just an average workman?

If you knew the ins and outs of some trade or profession—if you knew the **why** as well as the **how**—you wouldn't have to ask for more pay. You'd just naturally get it. The **Help Wanted** columns of trade papers teem with appeals for trained men. Draftsmen are wanted; foremen are wanted; superintendents are wanted; machine designers are wanted; chemists are wanted; advertising men are wanted; electrical, civil, mechanical, and mining engineers are wanted; architects are wanted.

It will cost you nothing but postage to find out all about the I. C. S. plan for making you worth more salary. Mark and mail the coupon. Doing it will place you under no obligation. Don't wait till tomorrow. Don't take chances on "put-it-offism."

Mark and Mail the Coupon NOW

International Correspondence Schools

Box 910, SCRANTON, PA.

Please explain, without further obligation on my part, how I can qualify for a larger salary and advancement to the position, trade, or profession before which I have marked X.

Architect	Estimating Clerk	Automobile Running
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Building Inspector	Mining Engineering	Textile Manufact'g
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Structural Draftsman	Mechanical Drafts.	Stenographer
Plum. & Heat. Con.	Stationary Engineer	Advertising Man
Supt. of Plumbing	Electrical Engineer	Window Trimming
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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

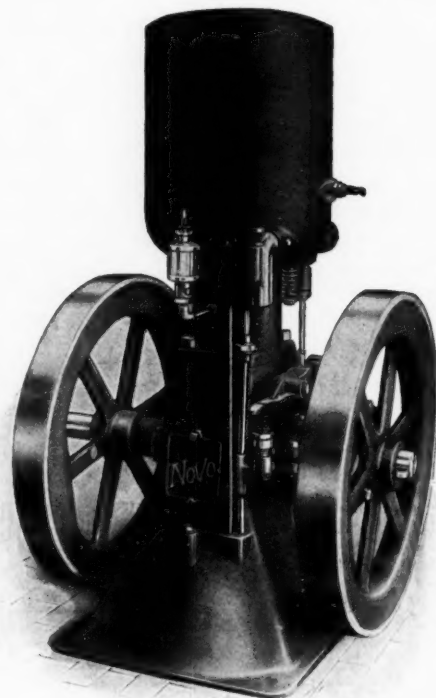
any yet placed on a band saw. These patent non-friction guides will run narrow and wide blades with equal facility; there are over 25,000 of these guides on the market in constant use. The revolving disk at the back gives the saw the best support possible. The side guides are adjustable to any width or thickness of blade. As the secret of successful band sawing depends largely upon the support and guide of the blade, you should see that your machines are fitted with these improvements.

For further information and prices, address The Charles E. Wright Company, 317 Boulevard, Kenilworth, N. J.

The Novo Engine

The Hildreth Manufacturing Co., of Lansing, Mich., claim that in the Novo they have perfected the small gasoline engine. Four sizes are made, from one and one-half to six horse-power, and by concentrating their efforts on these sizes they are able to produce what they claim to be the simplest, most reliable and satisfactory engine on the market.

The Novo is the result of years of study and experiment, based on sound, well-established principles, and combining the best features of modern practice. Space prevents more than a brief statement beyond the fact that the motor is built for hard, consistent and continuous work, operating contractors' equipment, such as pumps, concrete and mortar mixers, woodworking machinery,



Novo Gasoline Engine

etc., as well as running cream separators, pneumatic water systems, feed grinders, and all light farm duty. The engine is self-contained, a complete power plant, ready to set up at any time or place, and needing no pipe, tank or fittings.

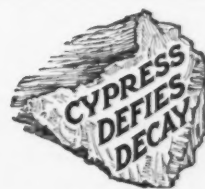
One of the novel features of the construction of the Novo is the manner of cooling. Only a small amount of water is used, obviating the necessity for tank or fan. The engine can be left out all winter without danger from the weather.

The base of the Novo is made in one piece, making the entire engine self-contained. For general use, such as contracting the value of this feature in portability is ap-

"CUT OUT REPAIR BILLS—BUILD WITH CYPRESS AT FIRST"



CYPRESS



In response to a very wide demand we respectfully offer

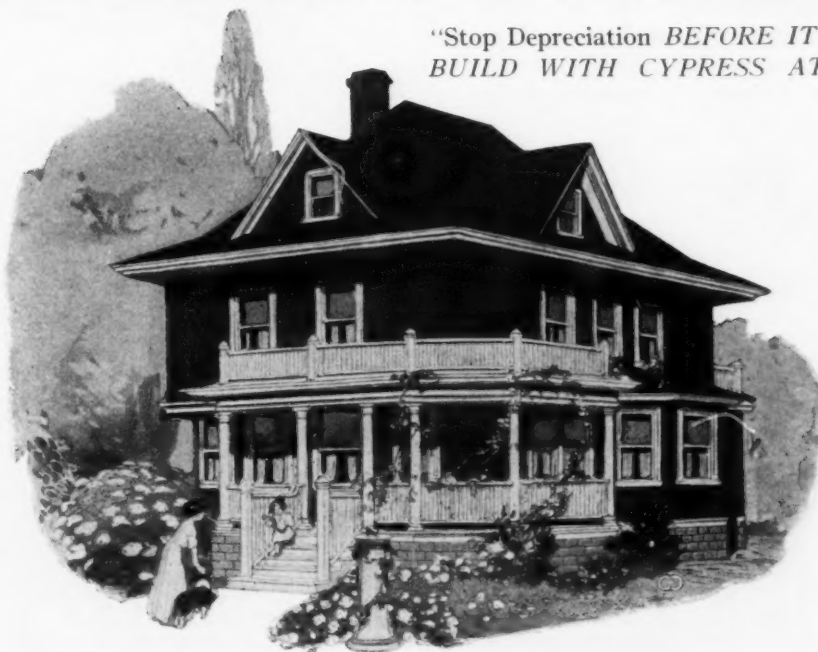
Another Cypress House Plan Free

The artistic, cozy and strictly modern CYPRESS SHINGLE HOUSE shown below meets completely and delightfully the desires of people who need more room than most bungalows contain, yet who wish to "keep the cost down." This CYPRESS house has 9 rooms besides the basement, and should be built complete for from \$3,800 to \$7,000, according to builder's taste and the kind of finish used. Complete WORKING PLANS and SPECIFICATIONS (sufficient for any competent carpenter to build from) are YOURS WITH OUR COMPLIMENTS in

VOL. 20 OF THE CYPRESS POCKET LIBRARY, SENT ON REQUEST. WRITE TODAY.

JUST THE HOUSE FOR SUBDIVISION OWNERS

AND CYPRESS THE IDEAL WOOD TO ENABLE YOU TO AVOID REPAIR BILLS.



"Stop Depreciation BEFORE IT BEGINS—
BUILD WITH CYPRESS AT FIRST!"

"EVERYTHING CYPRESS EXCEPT THE WINDOW GLASS."

MR. GUSTAV STICKLEY, the well-known Craftsman, writes: "In my experience, CYPRESS is the best American wood for all exterior use, such as shingles, timbers, pergolas, and all woodwork subject to weather. Its slight natural oil makes it practically impervious to moisture, so that it does not shrink or swell like other woods, and is very durable when protected merely by a coat of oil. In this it is similar to teakwood, in my opinion is quite as durable, and of course much more practicable."

ASK our "ALL-ROUND HELPS DEPT." any question about Wood. Our reply will be frank. We recommend CYPRESS only where CYPRESS can prove itself "the one best wood" for your use.



Southern Cypress Manufacturers' Association

1216 Hibernia Bank Building, New Orleans, La.

We produce CYPRESS—and talk it—but do not retail it. INSIST ON IT NEAR HOME. Probably your Local Dealer sells CYPRESS; if not, WRITE US, and we will tell you where you CAN get it.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

parent. The accompanying illustration shows one of the sizes of the Novo engine, and the manufacturers, the Hildreth Manufacturing Company, 151 Willow St., Lansing, Mich., will be pleased to send their catalogue or other desired information upon request. Users of small power machines should investigate this engine.

Tangible Proof of Woodworker Efficiency

We want to call the attention to those carpenters, builders and contractors who desire to quit making planing mills rich, to the letter and illustration reproduced below. It tells graphically how one contractor got a complete machine-shop when he installed one machine, and how his every requirement has been met and satisfied.

Ogdensburg, N. Y., Apr. 20, 1911.

Sidney Tool Co., Sidney, Ohio.

Gentlemen: By this mail I am sending you a picture of the No. 20 Universal woodworker that I installed this winter. It is one of the finest and most compact machines of its kind on the market.

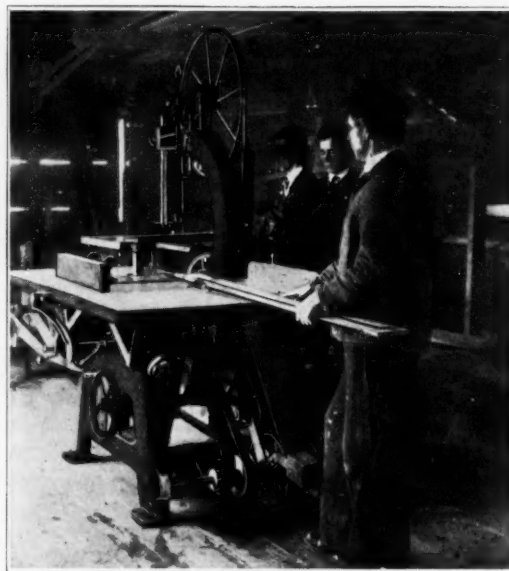
One of the most desirable features is that I can work three men at one time without interfering, as the picture shows. The work I have to do is the heaviest kind and have found that the machine will stand up under severe strain and also do the finest work and, at the same time, occupies very little floor space.

I certainly recommend this machine to any one needing a first class woodworker. Thanking you for the courtesies shown in the past and trusting to be able to be of some service to you, I remain,

Respectfully yours,

CHAS. C. IVES.

The machine referred to in above letter was the Famous Universal woodworker, built by the Sidney Tool Company,



"Famous" Universal Woodworker Keeping Three Men Busy

Sidney, Ohio., who inform us that over six hundred of their woodworkers are in use, and that not one has ever been returned for repairs.

Their No. 14 machine, which they claim is a special favorite among contractors, embodies the qualities of sixteen individual woodworking machines, and performs each class of work as well as a machine built expressly for doing only one kind of work.

To read the foregoing, a person's imagination would conjure up a machine, very complicated, very delicate and very difficult to understand. But strange to say the opposite is

For PUBLIC BUILDINGS



CORTRIGHT METAL SHINGLES have proven more adaptable than any other form of roofing, because they harmonize with all styles of architecture.

They combine every advantage found in other kinds of roofing, and have many exclusive features of their own.

The demand for them is large and ever increasing.

Your customer is bound to like them, for they last as long as the building, and never need repairs.

You are bound to like them, for they are as easily laid as wood shingles.

You stand to make just as much money handling them, and probably more than with other forms of roofing.

Send for our special proposition to Contractors, and free book "Concerning That Roof". Write for these today or simply mail us the attached coupon.

CORTRIGHT METAL ROOFING CO. :: Philadelphia and Chicago

Cortright
Metal Roofing
Company,
Philadelphia, Pa.

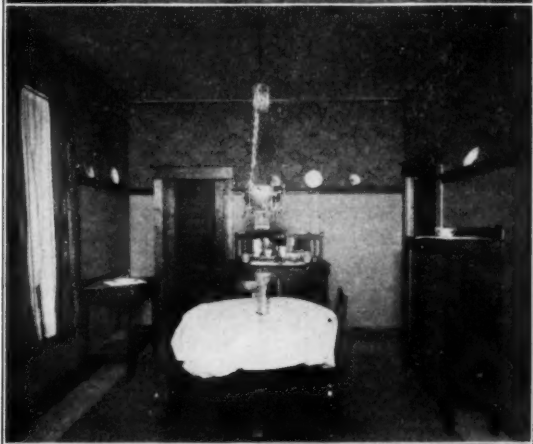
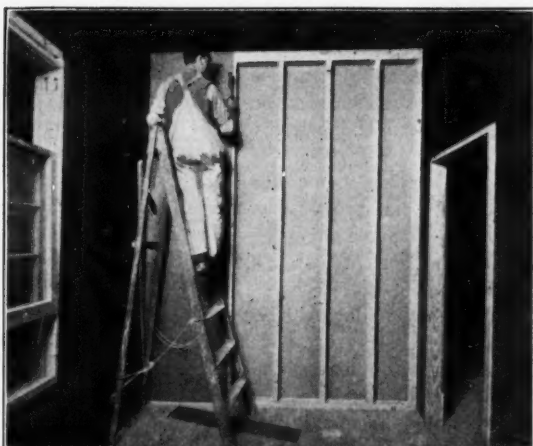
Gentlemen:—You may send me the free book and special proposition to contractors, as advertised in the July issue of A. C. & B.

Name

Street Address

City

Business



Utility Wall Board

Is Used on Walls and Ceilings of These Artistic Rooms

The first illustration shows how easily Utility Wall Board can be applied. The other two illustrations show how nicely wall paper can be applied on walls and ceilings lined with Utility Wall Board. Does it not look good to you? Wouldn't you like to have us send you a sample of it—and tell you how economical it is—How easily it is applied—How artistically it can be decorated? Our *beautiful illustrated booklet* tells the whole story—and shows pictures of artistic interiors. It is free for the asking, together with a sample of Utility Wall Board.

UTILITY WALL BOARD

is unlike any other Wall Board you have ever seen—It is made of exceedingly tough, durable fibre, thoroughly waterproofed—No moisture can penetrate it—It is applied directly to the studding, taking the place of both lath and plaster—Any carpenter can put it on—It will last as long as the house stands—You'll be amazed at the convenience of it—the economy of it—the beauty of it.

Mr. Contractor: This is your chance to make more money and finish your jobs quicker. **UTILITY WALL BOARD** is right in quality and price. It has come to stay and is rapidly taking the place of lath and plaster. Every up-to-date contractor and builder should get samples of **UTILITY WALL BOARD** at once. There are hundreds of places it can be used with a profit to you and satisfaction to the owner. Remember that all delays of the plasterer are a thing of the past for those who use this modern wall lining.

Don't fail to send for the sample and booklet at once—ask for our special proposition to contractors and builders

**UTILITY WALL BOARD is Sold Through
Dealers in Building Material Everywhere**

THE HEPPE'S COMPANY

4503 Fillmore St., Chicago, Ill.

1810 THE JAMES SWAN COMPANY 1911

SEYMOUR, CONN.

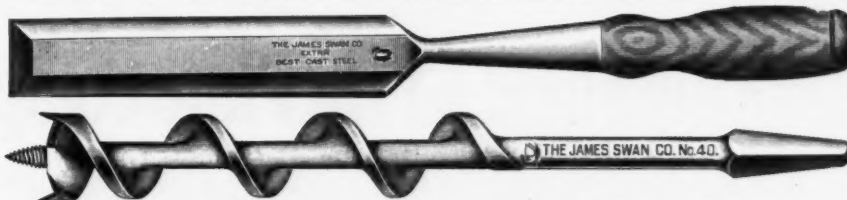
Manufacturers of

Mechanics' Tools, Augers, Auger Bits, Draw Knives, Chisels, Hollow Augers, Gimlets, Boring Machines, Gouges, Screw Drivers, etc.

Send for Catalogue



TRADE MARK



When looking for quality buy goods with the "Swan" trade mark.

RUSSELL & ERWIN MFG. CO., Sale Agents,

**NEW BRITAIN
NEW YORK**

**SAN FRANCISCO
CHICAGO**

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

the case. The principle of construction is so unique that complicated and delicate parts are conspicuous by their absence. As a matter of fact there is practically nothing about the machine that could break down or cause trouble in any way. In operation it is so simple that any machinist possessing a rudimentary knowledge of woodworking machinery can operate it with ease. The bare fact that out of the six or seven hundred in use not one has ever caused the least trouble, is sufficient evidence of its durability.

It costs nothing to get full particulars of this remarkable machine from the builders, The Sidney Tool Company, Sidney, Ohio, who state they will be extremely glad to answer any question concerning it.

A Time Saving Tool

The A B C Protractor Square is already well known to many carpenters as a useful time and labor saving implement for finding the lengths and cuts of all rafters and other timbers used in frame construction. We understand that the Crookston Tool Co., Crookston, Minn., the manufacturers of this tool, have recently reduced its price considerably so that now it is within the reach of all.

This will be welcome news to many of our readers who find the problems connected with the use of the ordinary steel square for roof framing a little too much for them. The A B C Protractor Square consists of three parts which, working together on the principle of the right-angled triangle, give all the cuts required on a building, no matter how intricate, also the length of rafters, etc. Complete instructions for the use of this tool may be had by writing the Crookston Tool Company who will also be glad to furnish complete information regarding the tool itself.

Do You Still Paint Your Roofs?

Thousands of farmers still count the cost of painting their ready roofings as a necessary part of their annual expense. Many of them are making trouble for themselves in the future by laying roofs which require constant attention.

There is a modern and better way of treating the roofing problem.

Amatite Roofing has come upon the market during the last few years and has proven a success. Amatite is like any other ready roofing (sold in rolls with nails and cement free, etc., ready to lay), except that it has a mineral surface which needs no painting.

It is just as easy to lay Amatite as any other roofing and just as cheap. The difference is that after you have laid your Amatite roof, you can leave it alone. The mineral surface is thoroughly durable and requires no painting.

If you do not know about Amatite, we advise you to investigate it. You can get a booklet about it and a free sample by simply addressing the nearest office of the Barrett Manufacturing Co., New York, Chicago, Philadelphia, Boston, Cleveland, Cincinnati, Pittsburg, Minneapolis, St. Louis, Kansas City, New Orleans, London, Eng.

J-M Waterproofing Materials

Among the many different brands of waterproofing materials now on the market, the H. W. Johns-Manville Co., 100 William street, New York, are offering a line of fabrics, felts, cements and coatings known as J-M Waterproofing Materials.

These materials, which are the result of this firm's half century of experience, careful study and unexcelled facilities, are especially made to meet every condition in waterproof building construction and have been effectively used for



USERS OF SHEETS



Contractors and Builders:

The accelerated acid test, as a measure of corrosion, is discredited by eminent metallurgists. This is the position we have always maintained. To those, however, who continue to believe, despite these conclusions, that the accelerated acid test is of any value in determining the lasting qualities of steel, we are prepared to supply either Black or Galvanized Sheets which will show resistance to the acid test, equal to or better than any iron or steel sheets now manufactured.

American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

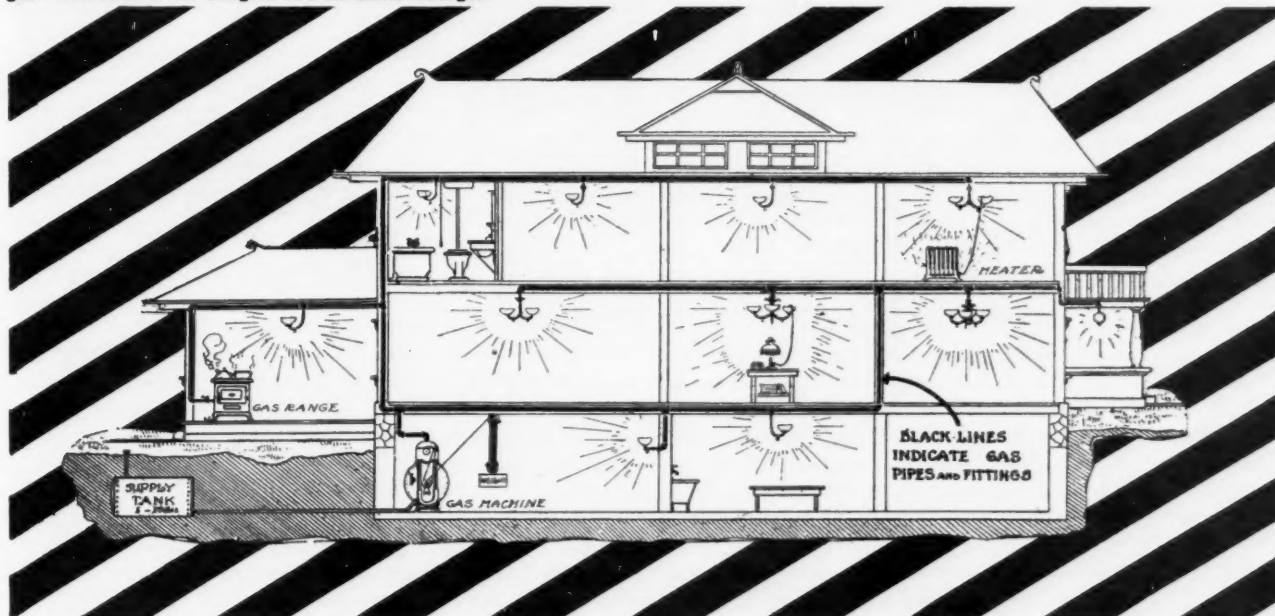
DISTRICT SALES OFFICES:
Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburg Portland San Francisco St. Louis
Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City.

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NOT EXPLOSIVE. NOT ASPHYXIATING.
NOT POISONOUS. NOT DANGEROUS.

ACME OF SIMPLICITY AND ECONOMY (1,000 Candle Power for One Hour for One Cent)

The Standard Vacuum Gas Machine has revolutionized Gas Production by means of a Vacuum Cold Process. Airgas can be used for Lighting, Heating, Cooking and Industrial Purposes. Airgas is made without the application of any heat and consists of 97 per cent of air that you breathe and 3 per cent of Gas. Machines are made in different sizes, for small homes, big residences, large buildings, or can be made to supply gas for entire towns up to 20,000 people. Gas made automatically throughout. No cleaning. No work filling machine. It runs itself. Uses Gasoline, Benzine or Naphtha, also called Petrol, or Motorspirits of any grade. Standard Vacuum Airgas can be made for 15 cents per 1,000 cubic feet. 32 times cheaper than electricity, 25 times cheaper than acetylene. 12 times cheaper than common kerosene oil lamps and 10 times cheaper than Coal or City Gas. Machine make gas only when needed, otherwise stands idle. It is always ready. Gas produced instantly. No waiting. All conveniences of city gas, with none of its dangers and its disadvantages.



The illustration above shows an entire Standard Vacuum Gas Plant for a Private Residence

Agents Wanted: We want a representative in each town or community. Agents will be fully protected. No experience of any kind required. Plants can be delivered ready for any location and for any country or climate. Systems will last a lifetime. Always satisfactory. No trouble. No worry. Contractors & Builders visiting the coming Cement Show in Chicago are cordially invited to call on us where we have a Machine on demonstration.

THE STANDARD-GILLETT LIGHT COMPANY, 89 W. Michigan St. Largest Manufacturers of Cold Process, Hollow Wire and Portable Hydrocarbon Lighting Devices. Write for particulars.

Carborundum Carpenters' Round Combination Bench Stone

You Can Use All of the Surface and Put a Clean Smooth Edge on Your Chisels, Plane Bits or Similar Tools—

Note the shape—round so as to give full play for rotary sharpening motion—There is no unused surface—The wear is uniform—Its use means a better edge in less time—Can be used dry or with Carborundum Temperoil, the oil that tempers the cut, smooths the edge, does not gum and has no acid.

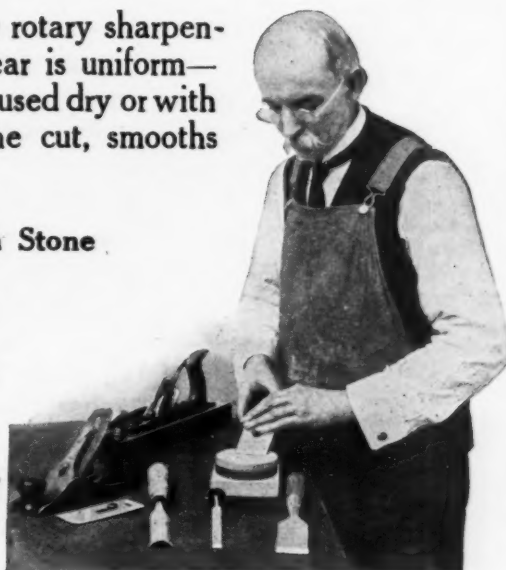
Carborundum Round Combination Bench Stone

No. 107	\$1.00
With Quartered Oak Box Holder	1.50
Carborundum Pocket Stone in Case	35
Carborundum Temperoil; 1½ ounce bottle	10

All from your hardware dealer or by mail direct

The Carborundum Company

Niagara Falls, N. Y.



waterproofing underground tunnels, walls of brick and concrete buildings, dams, reservoirs, swimming pools, etc., with much success.

J-M Waterproofing Fabric is strong, loosely woven burlap impregnated with pure asphalt. The asphalt not only clings, but becomes locked into the fabric, and it is claimed that a few layers of this fabric makes a waterproof course of great strength, ductility and elasticity that remains intact and resists moisture even when cracks occur in the cement work.

J-M Waterproofing Asbestos Felt is made of pure asbestos fibre, thoroughly impregnated with pure asphalt. The fabric, being composed of only mineral substances, contains nothing to decay or deteriorate, and is therefore well adapted for waterproofing all exposed and foundation construction work. In addition to being waterproof, it is also positively acid, mould and rot proof. The asphalt is of a peculiar nature, and has wonderful cementitious characteristics. It is used cold and hot and does not run, shove or creep, and will not become brittle in high or low temperature.

This combination produces a waterproofing fabric that is especially serviceable where continual dampness prevails.

One of the most perfect water and damp-proof materials made by this concern is their J-M Waterproof Coating. This is a combination of carefully selected materials of the highest grades, which, when applied, makes a film impenetrable by moisture. Aside from being inexpensive, it does away with furring and lathing and makes a positive bond between plaster and brick or stone walls. This coating protects plaster from strains due to dampness, also from discoloring by fireproof tile walls. Damp cellars and walls coated with this coating are made clean, sweet and useful.

This concern has issued a little booklet explaining fully the merits of their waterproofing materials, which they will gladly mail to anyone on request.

A Welcome Hot Weather Souvenir

Thanks to the Simonds Manufacturing Company, we are now enjoying the most elegant box of cigars (for hot weather use) that has come our way this summer; and the beauty of these cigars is that they can be enjoyed equally well by the smoker and the non-smoker.

Perhaps you have seen them—the "cigar fan." By pulling on the end you ordinarily light, a circular fan pulls out; and on these hot days the breeze that it raises it quite as acceptable as any amount of smoke.

Its a neat little trick souvenir and many of the carpenters will be glad to have one of them. The Simonds Manufacturing Company, Fitchburg, Mass., will doubtless be willing to mail these with their compliments to any of our readers writing to them.

Bontempi Rust-Proofing Process

Manufacturers of all kinds of builders' hardware and fixtures, metal lathing, metal roofing, or metallic building devices of all kinds that are exposed to the elements when in use, should appreciate the value of a practical and effective rust-proofing process. What is claimed to be the best and cheapest process for the prevention of rust in iron or steel is now being exploited by the Bontempi Rust-Proofing Co., 109 Broadway, New York.

Some six years ago the Bontempi process was patented in the United States by its inventor, Augusto Bontempi. The process was carried on at first only in a limited way, more for the purposes of demonstration than on a commercial scale; but as the articles treated withstood the tests of time and extended use, the facilities for treatment were added to. The company now maintains a large furnace at Long Island

"Northwestern"

The Largest Line of Concrete Machinery in the World

A Machine, Mould or Tool for Every Purpose

A Few Things We Make:

- Mixing Machines
- Block Machines
- Silo Block Machines
- Brick Machines
- Cap, Sill and Lintel Machines
- Fence Post Machines
- Drain and Sewer Tile Machines
- Porch, Column and Baluster Moulds
- Pier and Chimney Moulds
- Ball Moulds
- Lawn Vase Moulds
- Jardiniere Moulds
- Fence Post Cap Moulds
- Tombstone Moulds
- Burial Vault Moulds
- Block Cars
- Cinder Crushers
- Rock and Ore Crushers
- Sand Screens
- Stone Screens
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- Stone Elevators

THE BEST LINE IN EXISTENCE FOR DEALERS
THE MOST PRACTICAL FOR CONTRACTORS
THE ONLY POPULAR PRICED LINE MADE



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- Wheelbarrows
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General Concrete Machinery
Concrete Mixers
Pressure Block Machines
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all sizes and styles

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BURLINGTON



Venetian Blind for inside window and outdoor veranda. Any wood; any finish to match trim.

VENETIAN BLINDS

Improve any House

Not only in appearance, but in increased advantages, they will add value to the building. Give privacy, when put up on windows or porches, yet permit a perfect ventilation. They match any wood or finish and require no pockets.

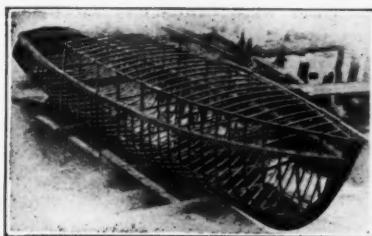
Burlington Venetian and Sliding Blinds, Screens and Screen Doors "keep out the sun but let in the air." Write for our special price list and catalogue for carpenters and builders.



Sliding Blinds for inside use. Require no pockets. Any wood; any finish.

BURLINGTON VENETIAN BLIND COMPANY
341 Lake Street, Burlington, Vermont

Build Your Own Boat



Send for free catalog which tells the whole story.

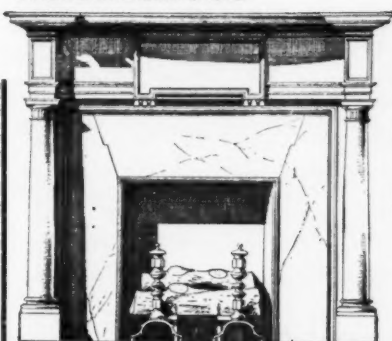
DEFOE BOAT & MOTOR WORKS
3213 State Street, BAY CITY, MICH.

"Any man experience unnecessary, can build a boat by the use of our boat frames and patterns."

This picture shows a 40 ft. Cruiser frame ready to take apart and crate for shipment."

Knock-down frames for boats of all sizes. From the canoe to the 70 ft. motor yacht. People of wealth buy them, have the work finished by local hands, and save at least 1-4. People of limited means purchase them, finish the work themselves, and save at least 3-4.

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Every contractor should have our Big Catalog

There is Money in selling our Mantels

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The Guaranty

of Quality

By hanging the doors of your buildings on hinges whose quality is guaranteed by this Trade Mark printed on the labels and stamped on the goods, you insure the satisfaction of the owner, and protect your reputation as a builder against inferior goods.

Upon application we will send you an attractive booklet showing a number of our lines of Wrought Steel Hardware.

THE STANLEY WORKS

Department A.

New Britain, Conn.

Band, Circular, Compass, Concave, Cross-Cut, Drag, Gang, Grooving, Hack, Hand, Mill and Scroll

SAWS



EVERY SAW BEARING OUR BRAND IS FULLY WARRANTED

We have been making saws for more than 55 years. In that time we have been constantly experimenting at great cost, and have perfected our machinery so we can now produce saws superior to all others. Write us for prices and circulars on any kind of saw required. We also manufacture Machine Knives of every description.

ALBANY SAW WORKS CO., Established 1855
70 Westerlo St. ALBANY, N. Y.



EARN A TYPEWRITER IN AN HOUR

Emerson Visible Typewriter given FREE to anyone, anywhere, Man or Woman, Boy or Girl, who will do us a very small service. One Hour of Your Time May Do. No selling, no canvassing necessary: only a few moments of your spare time required.

MR. F. W. HORN, Burlington, Iowa, writes.—"Earned an Emerson Typewriter in just a Few Hours."

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Hundreds Write This Way!

WONDERFUL OFFERS for Agents and Dealers.

No previous experience necessary—Big Pay for your spare time—Just the thing for railroad men, clerks, merchants, doctors, lawyers, preachers, teachers, salesmen, canvassers and others to turn their spare moments into money.

First to Answer Gets Agent's Great Inside on a Sample Machine.

10 CENTS A DAY buys the Emerson, and it's offered on a Free Trial Plan at an Unheard-of Low Price.

The Wholly Visible Emerson is one of the best Typewriters ever made—entire line visible, universal key board, easy to operate, easy and quick to learn—a child can quickly master it, yet ideal for largest offices and most expert stenographers. Two-color ribbon, writes colors, tabulator, rapid, silent, easy touch, simple, durable, beautiful.

DON'T PAY EVEN \$20 for any Typewriter made until you write for our FREE OFFERS.

For Our Great Free Offer regarding these Free offers, for copies of letters from the many who are using Emerson Typewriters which they received for only a few hours of their spare time. For everything we and others can tell you about the Emerson Typewriter on a Postal Card or in a letter to us, simply say "Mail Me Your Free Offers."

THE EMERSON TYPEWRITER CO., Box 180, WOODSTOCK, ILL.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

City, N. Y., where any quantity may be treated. The process is described as follows:

"Articles to be treated are placed in a muffle and are then heated till the pores are opened. A compound of chemicals is then injected in the muffle, creating fumes which fill the pores and fix a magnetic oxide on the iron. The articles thus treated will not rust. The depth of coating depends upon the time of treatment, but it can reach a thickness of one-sixteenth of an inch, and even more. With the ordinary treatment the surface is not materially added to. The metal does not change its properties, except on the surface. The chemical is not poisonous or injurious. The penetrating power of the treatment is such that in a layer of small articles one foot deep, or even more, all of the articles receive exactly the same treatment. A complicated device can be treated without being taken apart. Locks are exhibited, all the interior working parts of which have been rust-proofed in position and screws and threads on pipes treated in place show no filling of the threads, the screws turning after treatment as easily as when first cut.

"Articles thus treated will take paint and nickel-plating. The treatment has been thoroughly tested for several years, and gives protection far superior to any process so far discovered. The size or amount of iron to be treated at one time depends entirely upon the size of the muffle.

"When removed from the muffle, the specimens treated are of a silver gray color when cooling. An oil bath gives a dead black surface which, under the buffing wheel, can be made to take a finish like polished gun metal."

Manufacturers who are interested in this process are asked to send samples for treatment, or to call at the company's offices at 109 Broadway, New York, and inspect the various samples of treated and untreated metals. The company will contract for regular work shipped to its Long Island City

furnace, or it will license manufacturers to use the process. It is claimed that the Bontempi process is much cheaper and more effective than galvanizing and the company is willing and ready to prove its claims at all times. Some interesting literature on this subject has been prepared, which will be sent to any address on request.

An Ideal and a Reason

Every good workman takes pride in his tools, whether they are of one kind or another. How many times a man will proudly display a saw or a plane and tell a friend how long he has had it. Even a pocket knife is often shown as if it were some valuable treasure. If you examine one of these long-tried tools you may fail to find the maker's name. If you stop to think for a moment you may wonder where the rest of the original companions of the saw or plane are—those that were bought at the same time.

The fact that these tools have lived so long, and done so much, shows that the set varied in quality, and the other tools fell behind the ones you are shown, and were old and useless when the survivors were prime and at their best.

The reason for this is found in the sources of their production, for most likely each tool came from a different manufacturer. There was no way to tell. The blades of the chisels were made in one factory, the handles in another. Braces were bought by the dealer from one house, bits from another. There was no complete relation between the different pieces of the kit, so there could not be uniform quality.

This is the reason why the Simmons Hardware Company conceived the idea, more than forty years ago, of selling a complete line of tools so intimately related one to another that the buyer could buy the same quality in different tools, at the same time, or at different times. This line was named Keen Kutter, and the Keen Kutter trade mark is the dis-



OAK FLOORING

Every builder, owner and investor should insist on OAK FLOORING, because its distinctive characteristics of natural beauty makes it the **King of Flooring**. Any truthful landlord will tell you that OAK FLOORING increases the renting and selling values of any building.

OAK FLOORING is rich and cheerful in color. It imparts an air of refinement and elegance to a home. A home is half furnished when laid with OAK FLOORING.

OAK FLOORING $\frac{3}{8}$ inch thickness can be laid over old floors at a very low cost. It is cheaper than carpets.

OAK FLOORING is made in four grades and is adapted to the humblest of homes or a palace.

Use OAK FLOORING for artistic, economical and durable qualities.

Write us for further information.

THE OAK FLOORING BUREAU, 833 Hammond Bldg., Detroit, Mich.

WANTED—A GOOD FIRST-CLASS CONTRACTOR and BUILDER IN EVERY TOWN

to take the Agency of the Celebrated

M & O-LINE of "WOOD AND TILE" MANTELS

We issue a catalogue of our extensive line and offer special inducements to the right party — We want reliable agents.

Write today to

MOORMANN & OTTEN,

611-613 Main
CINCINNATI, OHIO



A Safe Guide

When in the market for Varnish remember this:

The high quality and splendid satisfaction-giving of Lowe Brothers "High Standard Paint" insures that you will get the same good value.

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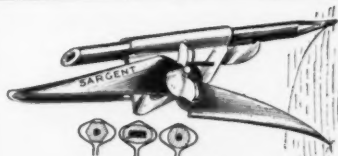
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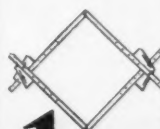
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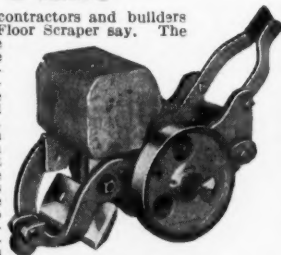
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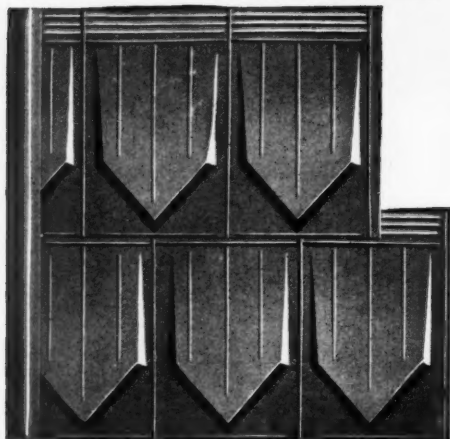
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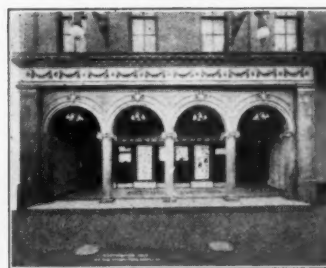
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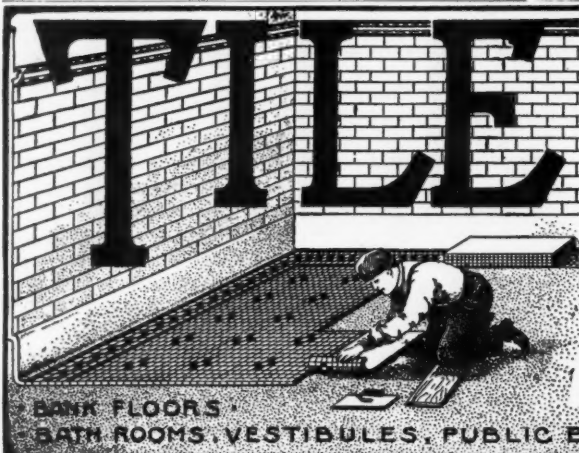
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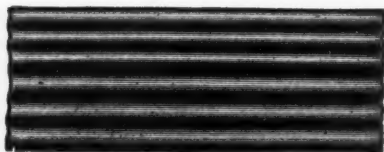
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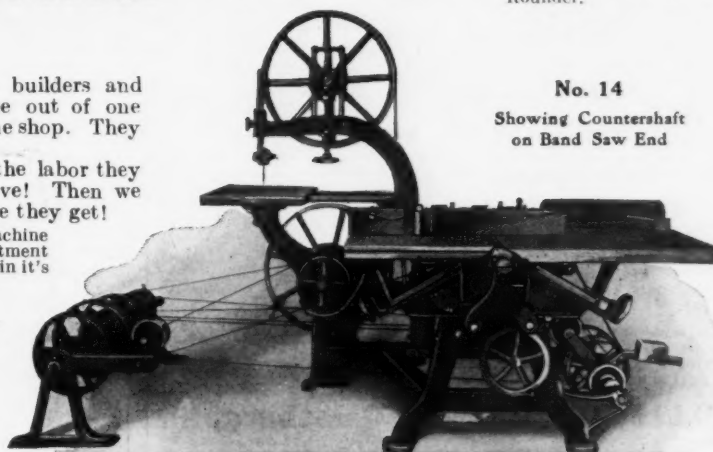
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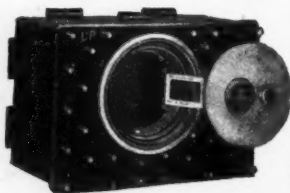
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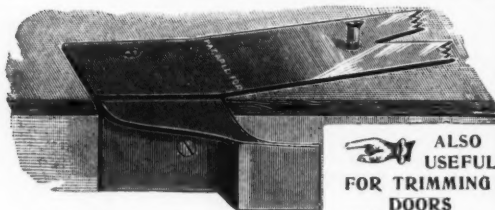
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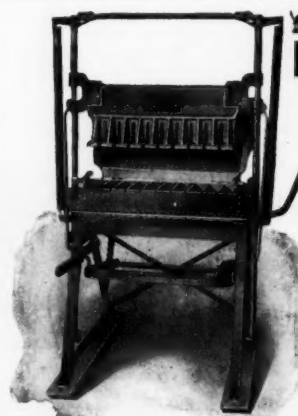
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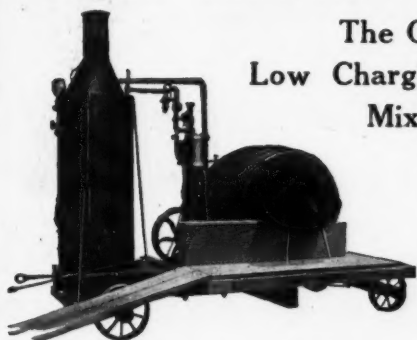
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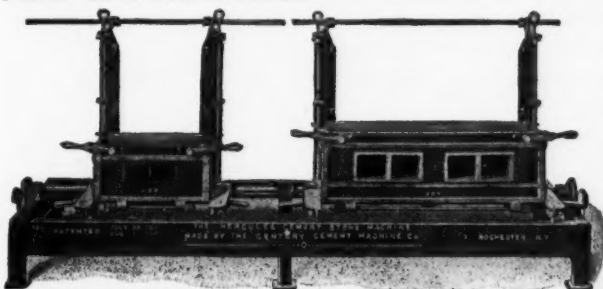
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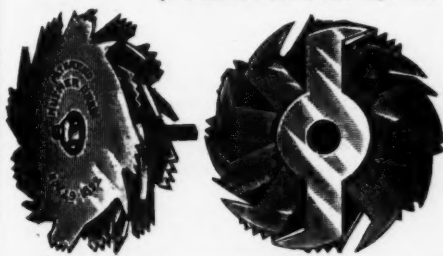
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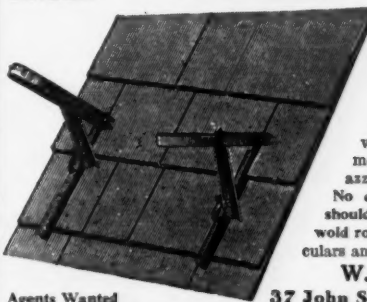
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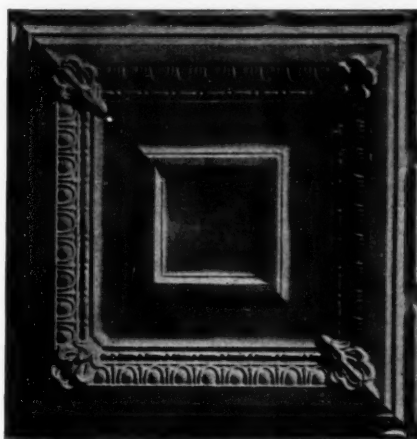
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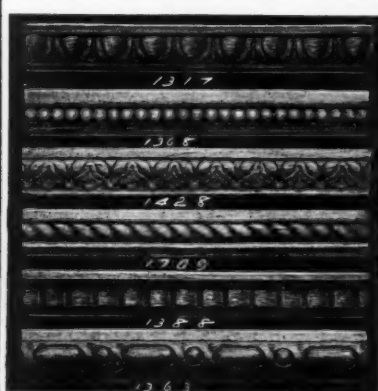
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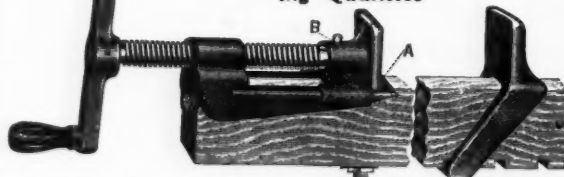
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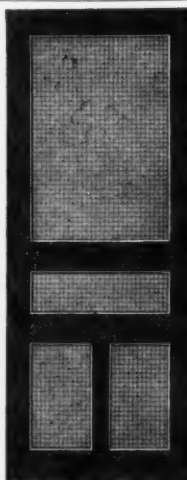


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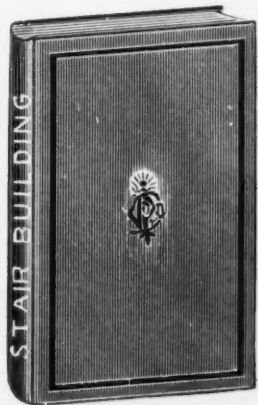
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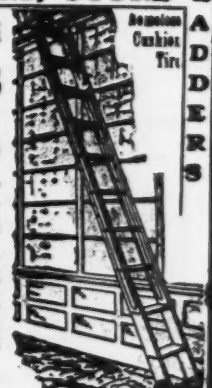
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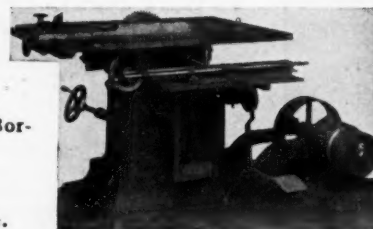
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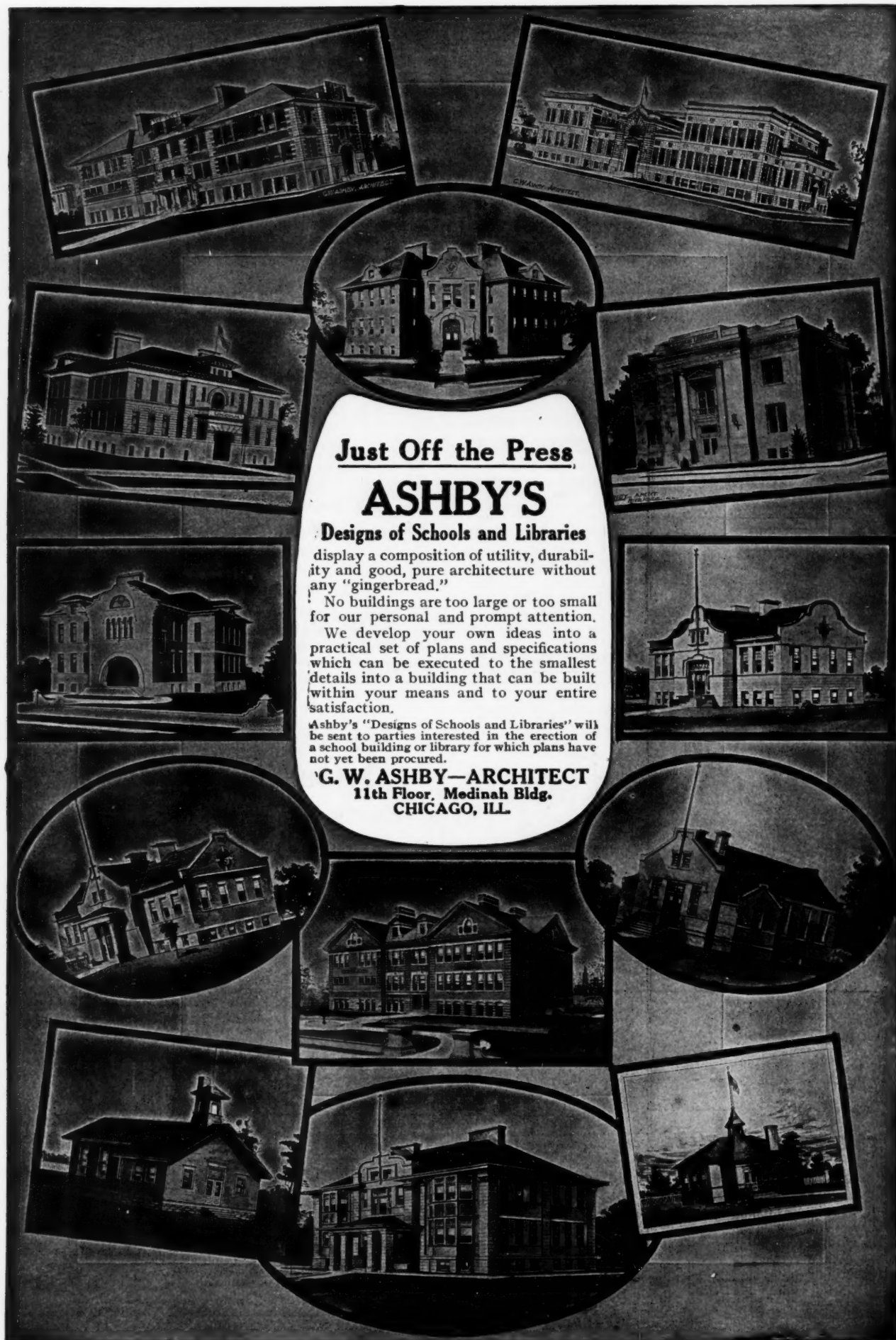
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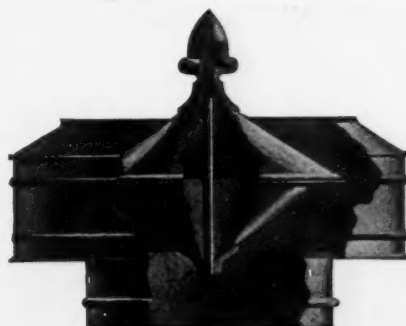
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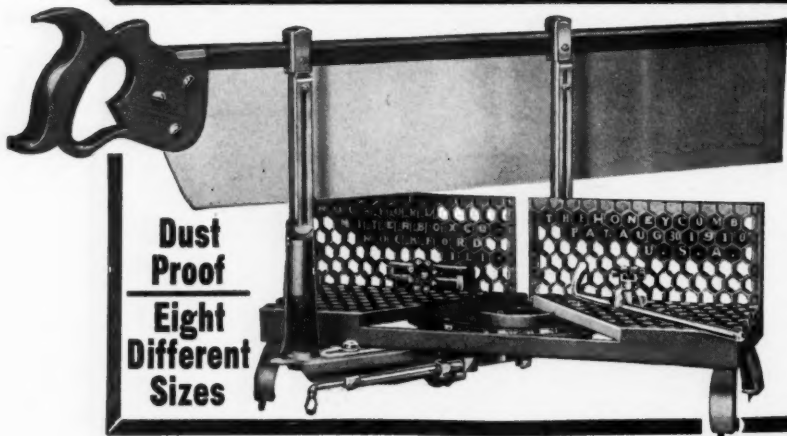
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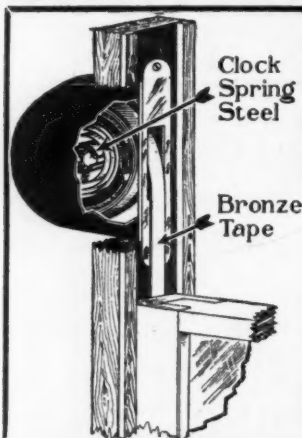
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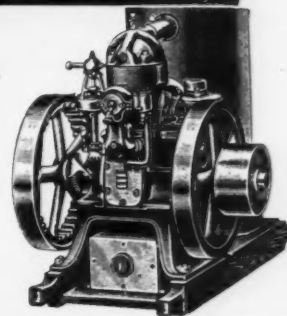
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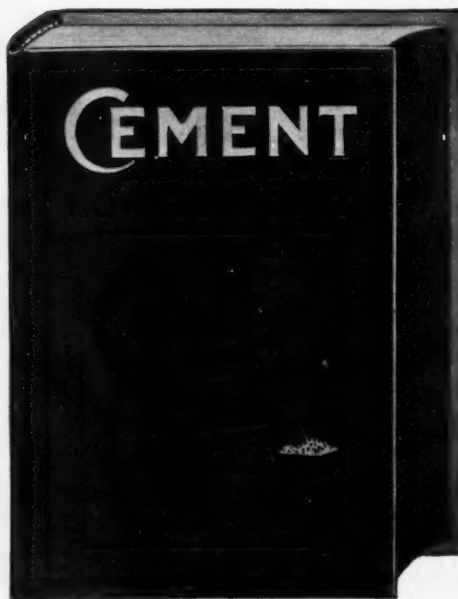
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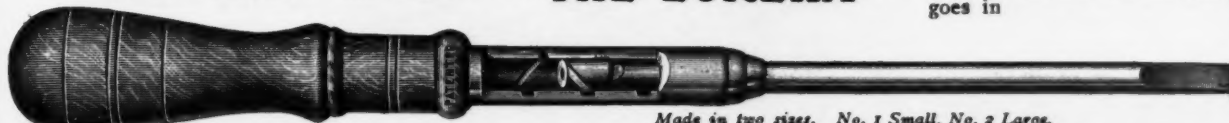
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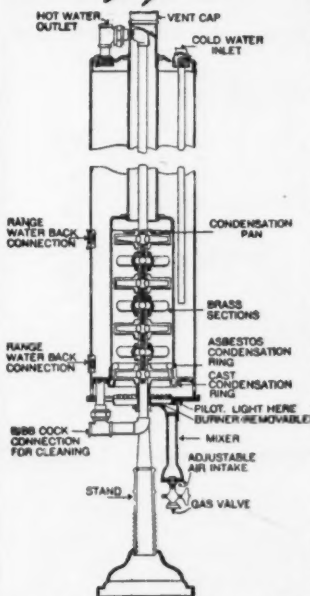
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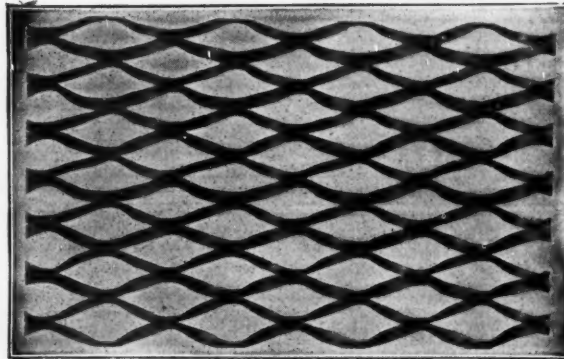
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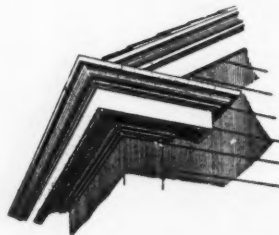
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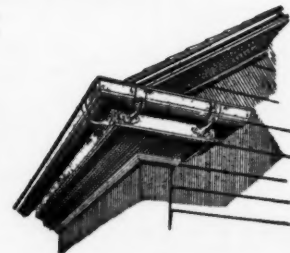
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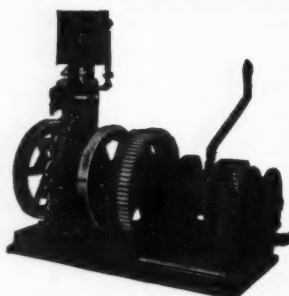


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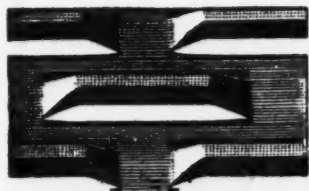
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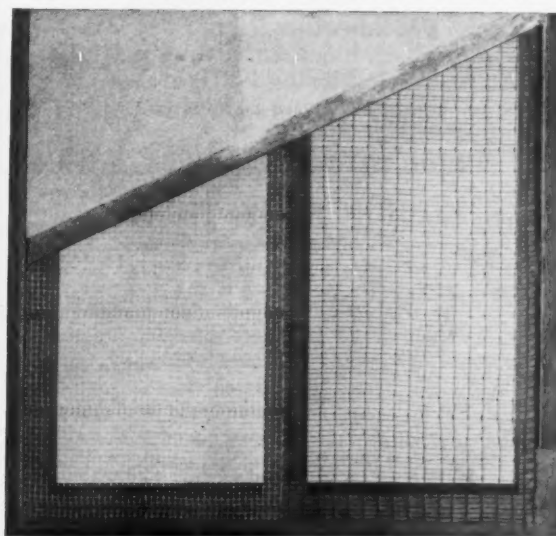


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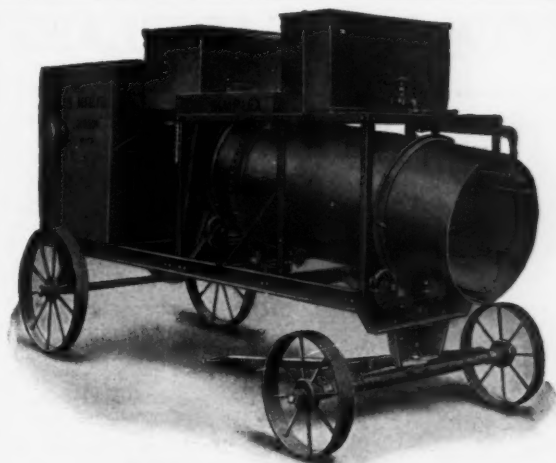
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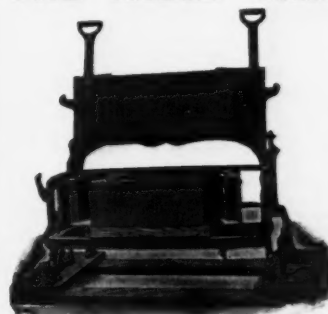
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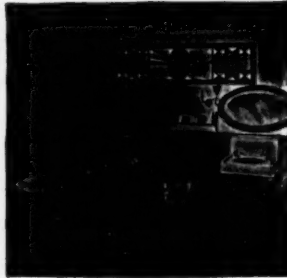
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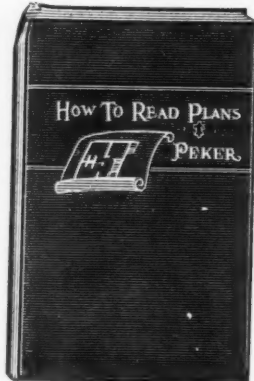
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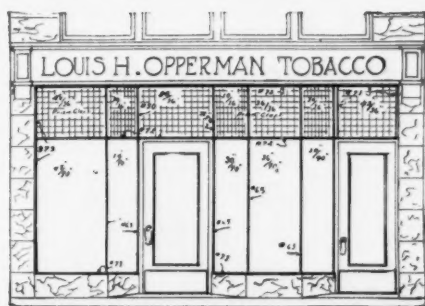
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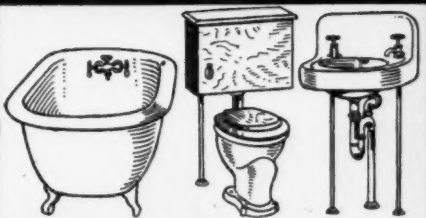
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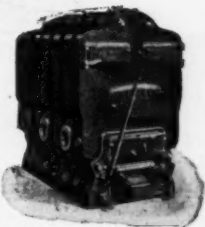
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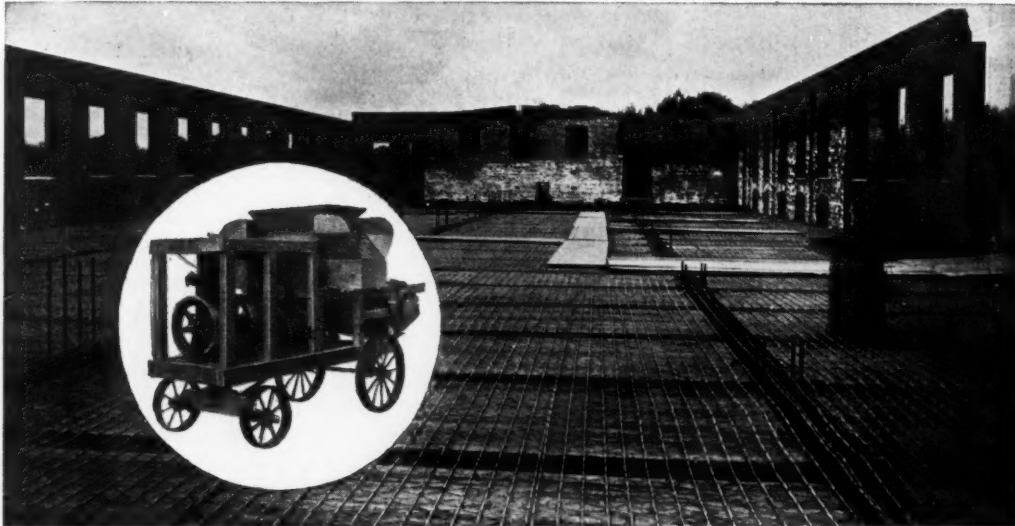
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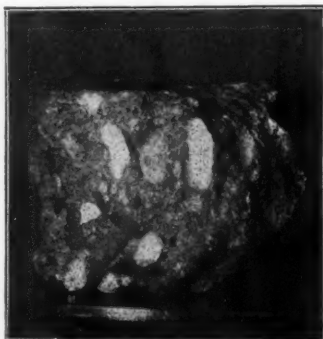
COLTRIN is lost so far as dollars are concerned, for our two COLTRINS have proven themselves reliable, faithful and money makers.

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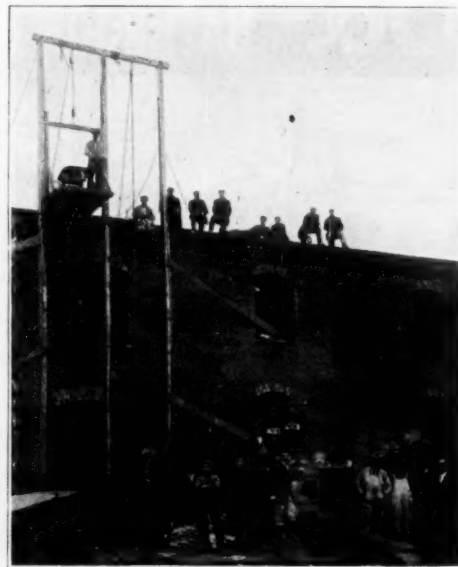
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NOTICE TO ADVERTISERS

Forms for the August number of the American Carpenter and Builder will close promptly on July 20. New Copy, changes and orders for omissions of advertisements must reach our business office, 178 West Jackson Boulevard, Chicago, not later than the above date to insure attention.

AMERICAN CARPENTER & BUILDER CO.

BISHOPRIC WALL BOARD AND SHEATHING

ANY WEATHER is "Good Building Weather" when you use **Bishopric Wall Board** as a substitute for lath and plaster. It is cheaper and better and does away with all delays in building. It is nailed to studding dry, ready for immediate application of paper, paint, burlap, or any other kind of decoration.

FOR WALLS AND CEILINGS



Bishopric Wall Board Easily Applied

This substitute for lath and plaster is made of kiln-dried, dressed lath, imbedded in hot Asphalt Mastic surfaced with sized carboard and cut at the factory into 4x4 feet sheets, which are easily and quickly nailed to studding, ready for immediate application of wall paper, paint, burlap, or other decoration. The laths imbedded in Bishopric Wall Board give it wall strength, a guarantee against warping.

It is applied dry, is guaranteed not to swell, shrink, warp, crack, flake or blister; is clean, sanitary and odorless; is proof against moisture, cold, heat, and vermin; saves fuel in winter and keeps out summer heat; also deadens sound.



Applied Dry Winter or Summer

Shows Construction of Bishopric Wall Board

It is suitable for dwellings, factories, new partitions in old buildings, finishing attics, porches, laundries, cellar ceilings, garages, etc.

PRICE OF WALL BOARD AND SHIPMENT—Crate of 16 sheets, covering 256 sq. ft. of surface, \$6.40 per crate, or \$2.50 per 100 sq. ft., f. o. b. New Orleans, Cincinnati, or Alma, Mich. We ship from nearest point.

Bishopric Sheathing is Cheaper than Lumber; saves 75% in Labor; does away with Building Paper

BISHOPRIC SHEATHING

Ideal Material for Cement Buildings or Stucco Exteriors. Proof against Dampness, Heat and Cold

Bishopric Sheathing is made of same materials as Wall Board, but finish is not necessarily so fine, therefore costs less. It is of uniform thickness, insuring a perfectly even surface when applied.

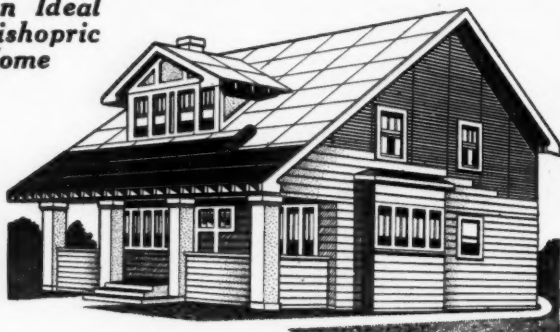
Bishopric Sheathing is nailed to studs, with lath and asphalt side exposed. Over laths weather boards are nailed or cement applied.

Bishopric Sheathing makes a more solid and substantial wall than lumber. There are no gaping joints; no widening cracks due to shrinkage; no knot holes.

The Asphalt Mastic in Bishopric Sheathing is a non-conductor, moisture cannot penetrate it. It is proof against vermin. The pests cannot bore through the tough, gummy Asphalt Mastic. In applying weather-boards over laths, dead air space is left between the laths; forming splendid insulation. Does away with the expense of building paper and cost of its application.

One wagon load of Bishopric Sheathing covers an area from six to ten times as great as one load of lumber—a tremendous saving in hauling. Five thousand feet can be hauled in an ordinary wagon.

An Ideal Bishopric Home



Ideal home showing Weather-boards over Bishopric Sheathing, lath side exposed, also Bishopric Roofing over Bishopric Sheathing. (smooth side of sheathing exposed)

The cost of applying Bishopric Sheathing is but \$2.50 per 1,000 feet—A SAVING OF ABOUT 75 PER CENT. Furthermore, 1,000 square feet of wood sheathing covers but 750 feet of surface, 20% less being due to tongue and groove. In Bishopric Sheathing 1000 sq. ft. covers 1000 square feet of space.

Write for Descriptive Booklet and Samples—all Sent FREE. Dealers Write for Proposition.

THE MASTIC WALL BOARD AND ROOFING MFG. CO., 24 E. Third St. Cincinnati, O.

In applying ordinary lumber, heavier scaffolding, more tools and greater scaffold floor space are required. In applying Bishopric Sheathing, one man drives a few nails in each sheet; a common laborer or boy can finish the nailing.

Bishopric Sheathing insures comfort during the construction of the building. As soon as the building is closed in with Bishopric Sheathing, the men may work in comfort on the inside during bad weather, finishing the outside on suitable days. This insures continuous work, without loss of time, enabling the contractor to hold his men and complete the work in the least possible time.

Bishopric Sheathing is used with equally splendid results under flooring and as a substitute for roofing boards. Used under floors, it serves as a sound deadener and keeps out dampness; used under the shingles, it keeps out cold and summer heat.

ITS MANY USES—Bishopric Sheathing also is used with excellent results as a lining for dairy barns, ranch houses, poultry houses, driving stables or any out-door building where protection from the elements, Summer or Winter is desired.

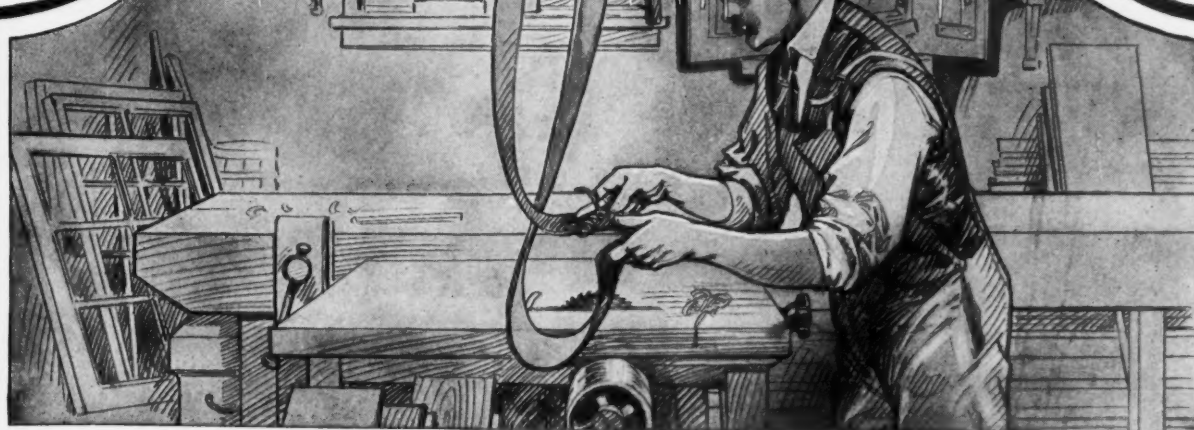
Bishopric Sheathing is the ideal material for cement exterior or stucco work. Cement firmly adheres to the laths and Asphalt Mastic and makes a solid, smooth exterior. For factory or residence this form of concrete or stucco construction is the cheapest and best known.

PRICE OF SHEATHING AND SHIPMENT—Crate of 16 sheets, covering 256 square feet of surface, \$6, or \$2.35 per square of 100 square feet, f. o. b. New Orleans, La., Cincinnati, or Alma, Mich. We ship from nearest point.

BISHOPRIC ROOFING SELF-PROTECTING

The materials used in Bishopric Roofing are self-protecting. Other roofings require protection in the way of paint or coatings to prevent drying out, cracking or rotting. Bishopric Roofing requires no paint. The Asphalt itself in this patented Roofing is toughened and perpetuated by an exclusive process. Carbonate of Lime is mixed with pure asphalt, making one homogeneous mixture, which stands a pressure of 500 pounds to the square inch. This is a positive guarantee against breaks and cracks. Asphalt Mastic may be exposed direct to the weather in any climate without danger of softening, drying out, cracking or crumbling. Write for free sample and literature.





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You need a good knife for your work. Occasionally you find a little job that no other tool will do, and *then* you must have real efficiency. Keen Kutter knives keep their edge. You won't wear out a Keen Kutter grinding it continually. The handle won't come off. The rivets won't work out, the spring won't leave the blades.

KEEN KUTTER

knives give satisfaction because they are true in temper, true in quality, and made for *work* every day in the year. You can put an edge on a Keen Kutter that will cut a straw, or a hickory sapling, and be fit for the next job. A Keen Kutter knife is good to own and good to use. Guaranteed to make good or you get your money back.

"The Recollection of Quality Remains Long After the Price is Forgotten."
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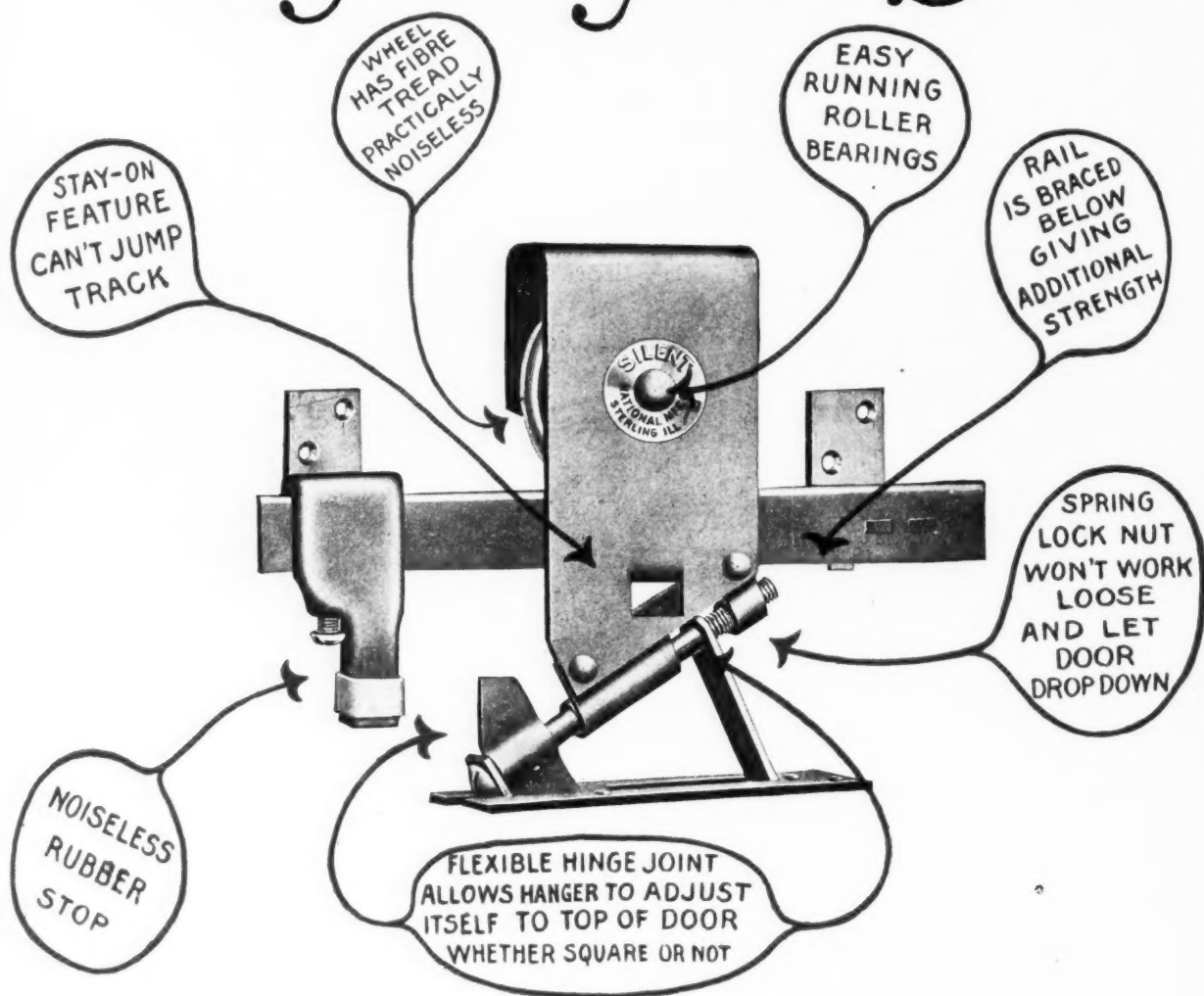
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